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*Itinerary from Phari in Thibet, to Lassa, with appended Routes from Darjeeling to Phari.*—By A. CAMPBELL, M. D. Superintendent of Darjeeling.

One more contribution to conjectural Geography in the form of an unpretending Itinerary, will not, I hope, incense the votaries of real Geography, and may less or more interest the members of the Society, as an attempt to familiarise them with a neighbouring country which is so little known to us, yet of such importance to be acquainted with. Phari or Pharidzong, is a frontier mart of Eastern Thibet, well known to the people of Sikim and Bootan, and to which there are other routes through the Himálaya proper, or snowy range, from both those countries. It is placed by Hamilton, from Turner, in Latitude  $27^{\circ} 48'$  N. Longitude  $89^{\circ} 14'$  E., and Lassa by the same authority in Lat.  $29^{\circ} 30'$  N. Long.  $91^{\circ} 6'$  E. Darjeeling is in Lat.  $27^{\circ}$  N. and Long.  $88^{\circ} 28'$  E. The itinerary therefore extends over  $2\frac{1}{2}$  degrees of Latitude, and two degrees 38 miles of Longitude, according to Hamilton, who however must probably give way to the later authorities of Europe, in the positions assigned to Phari and Lassa. The routes have been compiled with care, to procure the knowledge possessed by the informants. This is always a difficult task when done through interpreters, and when tried with illiterate and not very observant people, is laborious and discouraging. Mr. Hodgson has, by his notes and remarks, greatly elucidated the details of the itinerary, and has kindly allowed me to attach them to it.

The following Thibetan words are here translated for the convenience of the reader:—

Choo or tchoo, . . . . .	River,
La, . . . . .	Mountain or Range,
Tso, . . . . .	Lake,
Lahuri or lari ; . . . . .	A mountain Peak ; Chuma Lahuri or lari, the Peak of Chuma ; Larichoo, the river of the Peak.
Goomba or Goompa, . .	Monastery,
Gelong, . . . . .	Priest,
Lama, . . . . .	High Priest,
Anni, . . . . .	Nun,
Deunkang, . . . . .	Caravansari,
Jong, . . . . .	Fort or residence of a chief,
Samba, . . . . .	Bridge.

Where elevations are given, they have been calculated by making the informants compare known elevations at Darjeeling with the places described, or rather with their recollection of them.

#### *Route from Phari to Lassa.*

1. *Phari to Tangla.*—A short march about 6 miles—direction north by west. Phari is on the west bank of the Machoo river.\* The route to Tangla lies in the bed of the Larichoo River, which has its rise in the Chumulari mountain† and falls into the Machoo about two miles from Phari. The highest peak of Chumulari is close to Tangla. Chapa Goomba of Turner's route, is a mile to the east of "Tangla," and is overtopped by the peak of Chumulari. There are 21 Goombas‡ round the base of Chumulari. Chapa is one of them ; pilgrims make the circuit of the mountain visiting all the Goombas, which can be accomplished in five days ; at all the Goombas save one, (Katok Goomba) there are Lamas, some of whom are Bhutanese. The majority are Tibetans. The circuit of Chumulari is reckoned a work of great merit. The Goombas

\* Rises at Choloa, flows 10 stages N. E. and then E. to Phari. It is no doubt the Páchú of Klaproth and Painomchu vel Goddada of some of our maps, though the confounding of the two last is a great error.—B. H. H.

† See Turner's Embassy to Tibet, and vol. 12 Asiatic Researches, p. 253—4, for notices of Chumulari, which is estimated to be 28,000 ft. above the level of the sea.

‡ Gúmbá, religious house, Monastery or Convent, Ani Ghenba, Nunnery.—B. H. H.



are snowed up in the winter and are approachable in the summer only. There are images at all of them. No cultivation near them.

2. *Tenna*.—Rather a short journey, about 10 miles. The route nearly level, and the country cultivated and well peopled. Wheat ripens at Tenna, and turnips, cabbages and other vegetables are abundant.

3. *Goroogootang*.—About 8 miles in the direction of north by east. The road lies over a level country which is well cultivated with wheat and barley. There is a pottery here, and a Dāk Chowkey, also houses for the shelter of travellers; one for Lamas and respectable people, another for the poor. At the latter you pay about 2 annas—a Kakum, or 4th part of the silver Mohur, not a coin of this value, but literally the quarter of a Mohur. Traders alone pay; pilgrims and priests do not.

4. *Dochen*.\*—About 8 miles North by East. The road level and the country cultivated. There is a large lake here called “Dochencho;”† its length is N. and South about two miles; its greatest diameter a mile and half. It contains many kinds of fish, and the “Peu” (a native Carbonate of Soda, I believe) is found on its banks. In the summer season the banks of the lake are overgrown with a long grass 4 feet high, called Choomik. In winter they are bare. The “Changmo” or weeping-willow grows close to the water all round the lake. No wooden boats on the lake, but the fishermen use boats made of hides stretched over a basket-like framework, and sown together with leather whangs, the seams being rubbed over with beeswax. These boats carry 4 or 5 men, and are so light that one man carries them easily. The fish are caught in nets. Hooks and bait not used. The fish is preserved by simple drying in the sun, and exported to Phari and to “Menchona,” a populous district to the northwards.

5. *Kala Puktang*.—12 to 15 miles in a north and easterly direction. Here there is a lake of the same name. Its size is equal to that of the Dochen one: but it is celebrated on account of the great quantity of fish it contains. The country around this lake is barren; but it is more populous than around Dochen. The people live by the fisheries, which are very productive, and yield an annual revenue, which

\* Dochia of Klaproth.—B. H. H.

† “Choo” is water in Tibetan. “Tso” is Lake; this may be the water or Lake of Dochen.

is paid at Digarchi (Shigatzzi Zeung) amount not known. The road between the two lakes runs over a level country. The cultivators irrigate their lands from both these lakes. "Chuniulari" is seen from Kala Puktang to the south and west.

6. *Semodah*.\*—The "Sumdta" of Turner's route, one day's journey about 15 miles, in the direction of north by east. The road runs over a rocky, barren, and unpeopled tract; nor is there any halting-place on the way. It is a small village inhabited by Tibetans and has a Dâk Chowkey, or Post Station. There is a road from Semodah to Lassa direct; but it is a difficult and bad one, used only for expresses and by a few travellers; food is scarce on it; but the distance to Lassa is much less than by "Giangtchi" and "Yamda Yeumtso."

7. *Kamachooding*.—One day's journey due north, over a rather level country, well cultivated and peopled. There is a large Goomba here, as large as that of Swoyambhûnath in the valley of Nepal; it is called Kama Goomba; has about 80 Lamas attached to it and a large library. The Kamachoo, a small stream from the east, runs close to the Goomba. The cultivation of wheat on the banks of the stream is of a superior kind, and vegetables are abundant, such as turnips, radishes and cabbages.

8. *Chaloo*.†—One day's journey to the north, over a rather level country, which is however very rocky and barren. To the east of the road the mountains are close, and their tops are snow-clad in winter. To the west of the road the mountains are also near but not lofty.

9. *Saloo*.‡—One day's journey to the north. There is a Goomba here of the same name, with about 60 Lamas attached to it. This and Kama Goomba are dependencies of Digarchi. The country around Saloo is well cultivated and peopled.

10. *Kideepoo*.—One day's journey due north; a very bad road over a rocky tract without any ascent to speak of. The country around is partially cultivated; but there are immense flocks of sheep and goats, the pasture being abundant and fine. In the winter the herds are kept around Kideepoo, in the summer they are taken to the neighbouring mountains. This place is the residence of a Soubah.

\* Soumdta of Klapproth.—B. H. H.

† Chahú of Klapproth, who places Chalú south of Semodah.—B. H. H.

‡ Sadú ? of Kl. but he places it a stage beyond Giangtchi.—B. H. H.

11. *Demorang Zeung or Fort of Demorang*.—One day's journey to the north over a rocky country. About a mile to the north of the halting-place, there are 3 hot springs which are in repute for the cure of all diseases. No village here.

12. *Giangtchi*. \*—About 6 miles to the north. A small town and the neighbourhood well inhabited and cultivated. There is a Chinese officer stationed here with 3 or 400 soldiers, a few of whom are Mantchoo Tartars of the Chinese army. The rest are native Tibetans. A river runs by the town. It rises in the Yeung mountains which are to the north and east. It has no specific name. It is called Changchoo or Changtcheu. All large rivers in Tibet are called "Changchoo.†" Giantche is one day's journey from Digarchi, for an unloaded man say 20 miles, and here the road to Lassa goes off from that to Digarchi to the eastward. The first halting-place on the road to Lassa is

13. *Saoo*.—One day's journey to the east with a little southing, over an undulating country generally, cultivated and well peopled. There are many villages along the road: and the fields are irrigated from numerous small streams which run from the diminutive hills around; the greater number of which have a Goomba or monastery on the summit. The streamlets about Saoo run into the "Changtcheu," the course of which is north and west. Snow does not fall at Saoo: but it does on the line of road where it crosses the Yeung mountain for 3 or 4 months in the year i. e. November to February.

14. *Yeungla or Mount Yeung*.—One day's journey to the east by south, along a stony road which ascends all the way by zigzags to the resting-place, which is in a saddle on the crest of the mountain. The ridge to the north from the resting-place is higher than to the south,

\* Dziald'ge of Kl. This place is famous for a particular breed of ponies, (see Sp. Rev.) and is one of the more considerable of the very petty towns of Tibet.—B. H. H.

† Changchoo—river of Cháng, softened from Tsáng, which is the name of the western half of the central province of Tibet, called U'tsáng, U being the Lassa division, and Tsáng the Digarchi one. The great river of Tibet is called the river of Tsáng or Tsáng, vide Sanpú-Dzangbo of Klaproth. Its pre-eminence leads to all rivers, especially those of Tsáng, being called in a like manner, just as in India any large river is Ganga. Yaru is the distinctive name of the great river whose full title is Yaru tsáng pochú, great river Yaru of tsáng. Klaproth's Changchoo however, lies far off the route on the left hand.

and is estimated to be 2,000 feet above it. There is a Caravansari for travellers. Snow falls here in winter, but not enough to close the road. There is no cultivation or population at the Yeungla saddle. The zigzag road was made by the Government and is a good one for ponies.

15. *Rongting River*.—An easy day's journey by a descent all the way along a zigzag road as on the west side of the mountain. The country on the route is uninhabited and uncultivated. There is a Caravansari or Deunkang for travellers on the bank of the river, which has a stone bridge at the crossing. The "Deunkang" is a large stone building with a slated roof and has many apartments. Travellers of rank occupy separate rooms. The poorer ones assemble together. The Rongting runs to the westward by north.

16. *Dabloong*.—One day's journey along the banks and in the bed of the Rongting which is crossed five times during the march. At each crossing there is a stone bridge; the direction of the route is easterly and against the course of the river. There are a few villages on the river side and occasional patches of wheat and barley cultivation. Dabloong is a poor village of 10 houses, and on the east bank of the Rongting. No firewood at this stage. Travellers cook with sheep and goat dung.

17. *Karoola*.<sup>\*</sup>—Leaving the Rongting at Dabloong the road ascends all the way to Karoola over a barren and bare country. There is a "Deunkang" for travellers. It snows much here and is very comfortable. The traveller who cooks at this stage must bring the fuel (sheep's-dung) from Dabloong. The mountains to the north of Karoola are covered with perpetual snow, and are very lofty. To the south the mountains are much lower, and have no snow on them; supplies of grain are not procurable on this route after leaving Giangtchi, until you get to Kambala, in all 14 marches. Travellers must take grain with them.

18. *Zhara*.—One day's journey east by south. The descent is considerable on this stage, and the road runs along a spur of Karoola to Zhara, which is on an undulating plain or table-land. No cultivation along this stage. The Deunkang at Zhara is provided with servants

<sup>\*</sup> Kárú-lá, mount Kárú. So Yeung-lá, mount Yung. Kárú, probably the Kharab (misprint?) of Klaproth, who however gives it a meridional course parallel to and not crossing the route.—B. H. H.



who supply food, and who cook for travellers. These men are Chinese, and are appointed by the Ampas or Chinese councillors at Lassa. The traveller who can pay may have tea, spirits, flesh and eggs. "The charges are so high that Tibetans cannot afford to pay them, and the Chinese only can avail themselves of this accommodation; just as at the Dák Bungalows in India, where the charges are too high for the Natives."

19. *Chakloong (the place of thieves.)*—Chakpoo is Tibetan for Dacoit. This is a notorious haunt of robbers.\* It is their practice to conceal themselves in burrows under ground and watch for travellers, on whom they suddenly pounce. Murders are not commonly committed by gang robbers in Thibet unless the resistance is so great that it cannot be overcome otherwise. The direction of the route from Zhara is east by south, the distance one day's journey; the country level, but rocky, barren and unpeopled; the road, which is easy for ponies and loaded people, runs parallel to a river which rises in the Yeung mountain and runs to the south. There is no house here for the shelter of travellers, but there are numerous and spacious caves in which they rest. Some of the caves are large enough to contain 40 men comfortably. They are not natural caves, but have been cut out of the hill side which is of hard soil.

20. *Nagarchi Jong.*†—One day's journey to the east, over a level country, which is well cultivated and peopled; road good. This is the residence of a "Deboo" or Governor. His district is Nagarchi, which is a large one, extending more than 30 miles to the eastward of his residence. The whole country to "Yamdo Yeumtso," (Yarbragh Yeumtso of Pemberton's map) is level, well peopled, and cultivated.

21. *Yamdo, (Yeumtso.)*‡—A long march in an easterly direction over a finely cultivated country. There is a lake here of the same name, on the margin of which is the resting-place. The lake is seen from Nagarchijong, and is close to it some way to the south of the road. The lake of Yamdo Yeumtso is of immense circumference; "Garboo

\* M. Huc in his narrative speaks much of the robbers of Tibet, who, he says, are Kalos or black-tent nomadic Tibetans, erroneously styled Kalmaks. They are mounted gang robbers. See British Journal of the Propaganda.—B. H. H.

† Nagardzong of Pemberton's map; Nagar Oze of Klapproth, whose 13th stage it is.—B. H. H.

‡ Palté of our maps; Yarbrog Yú and Yambra Yúm of Kl.—B. H. H.

ong," a Raja of Lassa, once travelled round it in 18 successive days and nights. He had relays of Ponies all the way. The country all around the lake is well cultivated and peopled ; and fish are most abundant in all parts of it. The depth of the water is very great. At one place it is 18 score of fathom, 2160 feet. There is an island in the south-west corner of the lake, on which there is a Goomba named "Dorje Phamo." The passage is fordable and about a mile in width. This is the only part of the lake that admits of a fordable passage to the island. In all other parts leather boats are used in the navigation and fishing. The island is a mile in diameter and rises gradually from the water to a height of 200 feet. On the summit is the Goomba which is visited by immense numbers of people from all parts of Tibet. There is an avatari Lama always in this Goomba, which is one of great sanctity and note. It is built of stone and very large. The images are all gilded. The Gelongs\* belonging to the establishment are about 100 in number, and there are as many Nuns (Annees.) The library is a very extensive one and the lands appertaining to the monastery comprise the whole of the villages on the mainland to the west. The number and value not known. "The island is not at all large, nor is it the least like that in your map.† A man starting at daylight can walk round it by noon." This is the information of a Lama who has twice circumambulated the island on his visits to the Goomba. All the pilgrims and religionists who visit "Dorje Phamo" circumambulate the island three times ; once along the water's edge, once half way up the hill and once round the summit. On each circuit, at the four cardinal points, is a Chasting (Chaitya) in which are images of stone. The dead bodies of Lamas and Gelongs belonging to the Goomba are carried to the shore at the different Chaityas. A fire is lighted as a signal to the vultures ; a blast is blown from the thigh-bone of a man for the same purpose : and the body being cut into small pieces and the bones broken, the whole is scattered about to be devoured, which is done very quickly by swarms of kites and vultures. The bodies of the poor are thrown on the shore entire to be torn asunder at leisure : and after the flesh has been removed the skeletons are thrown into the lake.

\* Gelung is Monk ; Lama, he who shows the way ; lam, learned monk ; often Prior or Abbot.—B. H. H.

† Pemberton's.

There is a spring of sweet water on the Island, which supplies the Goomba, and on the mainland the people drink the water of other springs. The water of the lake is not reckoned wholesome. Running water is always preferred in Tibet. Horses and cattle swell up after drinking in the lakes, and sometimes suffer greatly from doing so.

22. *Yassi*.—One day's journey in a northerly direction along the banks of the lake. The road is good and passes through level fields and small villages all the way. There is a Post Station here, and nothing more.

23. *Kesong*, (*Sambo*)—*The bridge of Kesong*.—One day's journey in an easterly direction and along the lake's side. The bridge of Kesong, built of stone, is over a creek of the "Yamdo Yeumtso," which extends in a northerly direction about two days' journey. It is not running water. At the bridge it is 400 yards wide. The Yamdo Yeumtso is fed by numerous small rills, but has no river running out of it. The bridge of Kesong is sometimes under water in the rainy season (August). It is formed of 18 stone-masonry pillars with a platform of large slabs or slates. The depth of water at the bridge in the dry season is but 2 or 3 feet.

24. *Phedijong*.<sup>\*</sup>—One day's journey to the eastward along the lake. This is a station for a detachment of about 60 soldiers, Chinese and Tibetans, and the residence of a civil officer, styled the Phedijongpun. There is a good sized village and provisions are procurable. Wheat and barley are the principal articles grown in the neighbourhood. The country is level and productive. The plough with bullocks is used by a few of the better sort of people; but the hoe (*kodali*), is most in use. The cattle hereabouts are of a short horned kind, black, red and spotted. They are famous as milkers. Flocks of sheep and goats are numerous and extensive. The Kiang (wild ass) is not known here; it is most abundant about Chumulari and Phari.

25. *Tamaloong*.<sup>†</sup>—One day's journey east by south; about half way

<sup>\*</sup> Zung or Zeung, is fort, military post. Such and monasteries (*Gúmbá*) constitute the nuclei of nearly all the small towns or villages of Tibet; Zung-pun is chatelain, or Killadar.—B. H. H.

<sup>†</sup> (*Djamáloung* of Pemberton's map.) *Djamaloung* of Klaproth, who however places it on the *Sánpú*, far north of the Yamdo Yeum and having the Gamba or Kambo range interposed. Kl.'s route crosses the *Sánpú* here.—B. H. H.

between Phedijong and this place the road leaves the bank of "Yamdo Yeumtso" and the country rises, but is cultivated and well peopled. The ascent is gradual, however, and the road good. The village at this stage contains about 20 houses.

26. *Kambaparzy*.—A very long march. The road lies over a pass of the Kambo mountain, the whole of which to the north of the road is covered with perpetual snow. To the south also of the pass is generally covered with snow, and in winter the pass itself is sometimes snowed on, but is never blocked up. The district of Digarchi extends eastwards to the Kambo mountain; and the Lassa district extends westwards to the same range. The Kambola\* range extends southwards to the Yamdo Yeum lake and a great way to the north. The halting-place is at the foot of, and on the east side of the Kambo mountain. The ascent on the west side, and the descent on the east, are about the same in extent: Tamaloong and Kambaparzy being about the same level. At the latter place there is a good deal of cultivation, wheat, barley, and buckwheat (jáoo) are grown here. Buckwheat is not met with anywhere on the road from Phari, until you come to Kambaparzy, so that this is the lowest elevation on the road. It is warmer here than at Tamaloong. [N. B. The descent to Kambaparzy must be greater than the ascent from Tamaloong, as the temperature is considerably higher at the former station than at the latter. So say my informants.]

27. *Kumpachangtong*.—One day's journey due east, over a level country which is cultivated and peopled. There is some descent in the course of this march, and the temperature is warmer as you go along. Wheat, barley, and buckwheat are the staple crops. The plough is used in agriculture as well as the hoe; beans, turnips and radishes are the only vegetables grown.† [N. B. According to Pemberton's map the great river of Tibet, the Sampo, should have been met with on this march as on the preceding one.]

28. *Chasumchoori*.—One day's journey to the east. At this place

\* La, mountain. Kambo is the Gamba of Klaproth and Cambala of Rennell.—B. H. H.

† Moorcroft gives an excellent account of the 5 species of barley proper to Tibet, and which are eminently deserving of the attention of agriculturists. The turnips also are excellent.—B. H. H.



you cross the Yaroo Tzangbo,\* (Sanpoo) which is the largest river in Tibet. It runs here to the eastward, but its course previously is from the north, for it comes southwards along the east side of the Kambo range. The Yaroo Tzangbo does not run near Digarchi, it is to the north of that place. How can it run in an easterly course all the way from Digarchi when the great Kambo range runs north and south? The Yaroo Tzangbo comes a long way down from the north to the east side of the Kambo range. At Chasumchoori the Yaroo Tzangbo is three times the size of the Teestah river where it is crossed on the road from Darjeeling to Tumloong, the Sikim Raja's residence. There is an iron chain suspension bridge over the Yaroo at this place. It is only wide enough for one man to go along. The platform is a single plank a foot wide. Loaded men, cattle, horses and merchandise are crossed in wooden boats. The iron bridge was erected by the Lamas of Chasumchoori Goomba ages ago. The piers are of stone masonry, the chains are formed of strong links each a cubit long. The bridge does not span the whole river. The pier on the northern side is some distance from that bank, so that in the dry season even after crossing the bridge you have to wade some way to the shore. In the wet season you cannot ford the space between the northern pier and the bank, and are therefore obliged to cross by boat. The bridge is 20 cubit at least above the river, which is a rapid one and never fordable. The Goomba here is a large one; it has 200 Lamas and Gelongs belonging to it, and a very large library.

\* Yarú tsang-po. See preceding note.

Yaru is the proper name. Tsang-po, an epithet pointing out its intimate connexion with the great central province of the country or Tsáng.

De Coros, from Tibetan authorities, notices the several great ranges that traverse Tibet. He gives 6 such, and says Lassa and Digarchi lie in a valley between the 3d and 4th. But he implies that all these ranges run parallel to the Hímalaya, whereas the Kambo range is here clearly made to be a transverse or meridional chain, and M. Huc notices no less than 4 such as occurring between Siling and Lassa, viz. Chúgá, Bayam Khár, Tanla and Koiram, the winter passage of all which he describes in fearful terms. The Bayam Khár, says Klaproth, divides Siling from Kham, and the valley of the Hohangho from that of the Yangtse Kiang. The Kambo of this itinerary is the Gamba of Klaproth, who is followed by Ritter in making the range and the river run parallel to each other west to east, with a little northing, all the way from Digarchi to Jamaleing, where the river is crossed and the road strikes north up the Galdze to Lassa. Digarchi is placed on or close to the river by Klaproth (*Memoires* 3, 416, map) and by Ritter (*Atlas of Mahlmann*, No. II. *Ost Hoch Asien*.)—B. H. H.

29. *Choosoojung*.<sup>\*</sup>—One day's journey along the north bank of the Yaroo in a south-easterly direction. There is a Deboo or Governor resident here, and a Military Detachment of about 100 men, Chinese and Tibetans. They are armed with muskets, swords, bows and arrows. They have no artillery. They are not uniformly dressed. The Chinese wearing their national costumes, and Tibetans theirs. The country around is level, but the "Jong" or Deboo's house is on a hill. The Governor is a Tibetan. The climate is temperate here, as it always is near the rivers. When the sky is cloudless in the summer season it is hot : but the people wear woollens all the year round.

30. *Chisoom*.—One day's journey in a north-easterly direction, over a level country. This is the residence of a Deboo or Governor.

31. *Parchie*.—One day's journey in a south-easterly direction, over a good road and through a level well cultivated country. This is a Post Station, and the village is on elevated ground.

32. *Num*.<sup>†</sup>—One day's journey due east, over a level country. Road good, the country well peopled. It does not snow here even in winter, and the climate is agreeable, not cold, nor hot. This is a Post Station, not for the conveyance of mails, but where relays of Ponies are placed for travellers of consequence.

33. *Lang-dong*.—Due east from Num one day's journey over a good road. The country is well peopled, but there is no village at the resting-place.

34. *Jangh*.—A day's journey in an easterly direction. The country level, well cultivated and peopled. A small village and Post Station here.

35. *Nithang*.<sup>‡</sup>—This place is in the middle of an immense plain on which there is no cultivation or population. It is nearly bare, has no water and is very hot. People cannot live on the Nithang plain, which is a sort of desert on account of the heat and drought. The soil is sandy in many places. The Goa Antelope is the only animal found on Nithang. The plain is about 20 miles across.

<sup>\*</sup> (Tsisnchoudjoung of Pemberton's map.)

<sup>†</sup> Nam occurs in Kl. as the name of a ridge or Peak off the route and about a degree W. S. W. of Lassa.—B. H. H.

<sup>‡</sup> Kl. notes a river Nitang a feeder of the Galdzo which runs east from mount Nam. Rennell has a stage so called.—B. H. H.

36. *Kechoo*.—The resting-place is on the river of this name, which runs from the east and by the town of Lassa. Its course from Kechoo is to the south. It is a large river never fordable. It is crossed in leather boats. The banks of the river are fertile, well cultivated and peopled. The houses are all built of stone.

37. *Chambarangjeung*.—One day's journey to the north from the Kechoo river. There is a good deal of ascent on this march and the road is rough and stony. "Chambarangjeung" is the name of a large stone image which stands on a hill near the resting-place, and to which there is a considerable resort of pilgrims and worshippers. The history of the image is not known. It is believed to be of immense antiquity. It is in the figure of a man cut in bas relievé on the rock. Its height is reckoned at 30 feet and it is well proportioned. There are no inscriptions on the rocks about it. The right hand hangs on the thigh. The left is across the breast, and grasps a round stone, the size of a six pound shot.

38. *Tcheuling*.—One day's journey north by east over a level country. No descent from Chambarangjeung, and it is a nearly level plain all the way to Lassa. There is a Goomba here of the same name, the Lamas of which are of the *Geloo*\* order, i. e. they wear the yellow robe and sugar-loaf cap. The number, with the Gelongs, is about 100. The country around is well peopled. It appears that from Chambarangjeung to Lassa the country is an elevated plateau, and that the Kechoo river runs along its southern face. The elevation is estimated at about 200 feet.

39. *Teloong*.—On the left bank of the river Zsheunemoongtcho, which runs from the north and keeps a southerly course from "Teloong." It is crossed by a stone bridge. The country on both banks is level, well peopled and cultivated.

40. *Shemidonka*.—This is a small town inhabited entirely by Chinese, i. e. the males are Chinese, the women are all natives of Tibet. The Chinamen who serve at Lassa are not allowed to bring their wives along with them; they marry Tibetans, and on their return to China leave them and their families behind. The men of this town are principally soldiers, and other followers of the Chinese Ampas, resident Councillars, at Lassa. The distance from Lassa is about 30 miles.

\* *Gélúk-pá*, the most modern, but dominant sect of Lamaism.—B. H. H.

41. *Dehong Goomba, or Convent of Dêbúng*.—About 15 miles in a northerly and easterly direction. The road all the way is paved with stone flags and is broad and level. The country around is fertile and well cultivated. The grand Lama of Lassa, Gemooramoochi, frequently resides at Debong Goomba, which is a very large one and has extensive endowments of land.\* The Lama has five principal Goombas immediately subject to his control and near to Lassa. His chief residence is in Lassa, at Patala Goomba. To the east of the city is "Sera Goomba," one day's journey. To the west is "Deboug Goomba," a similar distance. To the south is "Mol Goomba," and to the north is the "Gandeng Goomba." The road at Debong Goomba takes a southerly direction along the Kechoo river to Lassa. The Kechoo is not crossed before reaching Lassa, it runs to the east of the city about half a mile. Patala Goomba is built on a rock.

42. *Lassa*.—15 miles from Deboong; a paved road all the way. The capital of Tibet and centre of Tibetan commerce and learning.

*Remarks by Mr. Hodgson.*

I have carefully compared Dr. Campbell's Itinerary from Phari to Lassa, with Klaproth (*Memoires relatifs à l'Asie* iii. 370—417) and Ritter (*Atlas von Asien* of Mahlmann). Klaproth, followed by Ritter, places Phari in 28 N. Lat. and Lassa in 30 $\frac{3}{4}$  N. Lat. His longitude of the former place is 87—of the latter, 89 $\frac{3}{4}$ ; so that we have 2 $\frac{3}{4}$  degrees of northing and the same of easting, and cannot allow above 400 miles for the whole distance, even if we give 100 for the road increase, and that is too much allowance on that head. Klaproth's main data are so well founded (*Mem. ubi supra*, p. 371) as to command a necessary assent: wherefore Dr. Campbell's total of 515 miles is clearly too much by above 100 miles. On routes like this, where there are few inhabited places to halt at, lazy folks like Lamas, make innumerable stages, guided by indolence and by convenience of wood and water,—both very rare in Tibet. Klaproth has but 21 stages—Dr. Campbell, 42. Klaproth's stages, as far as given, are as follows:—

- |                       |   |
|-----------------------|---|
| 1. Chasa, . . . . .   | } Chumalari occurs between 2-3 stages, much north of Chása; and under the peak is the lake of Ram or Zúm; route is due north all the way. |
| 2. Gangnam, . . . . . |   |
| 3. Dochia, . . . . .  |   |

\* Well described in Huc's narrative.—B. H. H.



- |                            |   |   |
|----------------------------|---|---|
| 4. Chalú, . . . . .        | } | Course N. E. Another lake called Gangla is passed.  |
| 5. Súmtda, . . . . .       |   |   |
| 6. Gangamor, . . . . .     | } | Course due N. up the Bainam river (Painom-chú.) A meridional ridge on either hand. That on the left called Chún. At Dzialdze the roads to Digarchi and to Lassa diverge. That to former down the Bainam, which falls into the Sanpu at Digarchi itself.   |
| 7. Cháhú, . . . . .        |   |   |
| 8. Nami, . . . . .         |   |   |
| 9. Dziáldze, . . . . .     |   |   |
| 10. Sádú, . . . . .        | } | Course a little east of north up the Nian river, a feeder of the Bainam, which having flowed S. W. as far as Dzialdze, turns N. W. led by the main stream. The Lalúng and Zúng are crossed; and oblique meridional ridges bound the road, which are styled Dadrang, and Kharab and Kiábzú. Those on the left hand blend with the Gamba range. |
| 11. . . . .                |   |   |
| 12. . . . .                |   |   |
| 13. Nagardzé, . . . . .    | } | Route lies to the N. E. chiefly along the Gamba range. The Sápú is crossed between 15-16 stages. The great lake called Yambra Yúm and Yár brok Yú, is left far on the right.  |
| 14. Chaidam, . . . . .     |   |   |
| 15. Jamálúng, . . . . .    |   |   |
| 16. Chúchúr, . . . . .     |   |   |
| 17. Raya dúmba, . . . . .  | } | Course nearly north along the right bank of the Galdze, several feeders of which are crossed; one is called Nitang, which name occurs not as that of a town. The Ram ridge remote on the left hand. No town of that name occurs. The ridge is obliquely meridional.   |
| 18. Nitang, . . . . .      |   |   |
| 19. Túrúng Gang, . . . . . |   |   |
| 20. Dúnggár, . . . . .     |   |   |
| 21. Lassa, . . . . .       | } | Course S. E. parallel to the river, which makes a deep curving bend, embracing Lassa on the south.  |

*N. B.*—A few stages may be omitted. Halts in the desert.

#### *Ranges.*

Dr. Campbell's 2d ridge is probably the Chún of Klaproth, who however gives it a meridional course parallel to the river Bainam and not crossed by the route. Dr. Campbell's Kárú ridge may be the Kharab of Klaproth, and his name, a misprint for Khárú-lá or mount Khárú. Dr. Campbell's Kambo range is questionless the Gamba of Klaproth. The route crosses it according to both. But Klaproth makes it run E.

and W. (from Jagagunggar to Digarchi) only treading a little to the north; and he makes the Sápú hold a parallel course, excepting the sinuosities of the river. Digarchi is placed by Klaproth on the right and south bank, and the river runs north of the town in an even eastern direction. There is another range, according to Klaproth, north of the river, which also is more or less parallel to its course. The Peaks of this northern range are called Súng Súng, Bukori, Nam, &c. The Kambo or Gamba range does not run southwards nor terminate at the great lake, nor can it be the boundary of the U and Tsáng provinces. A continuation of it, however, running from Jamálúng to the lake is meridional or follows a south direction, and seems to end at the lake, though Klaproth carries it much further south, viz. to Dód, under the name of Ganglagangri. This portion of the range may mark the boundary of the two great provinces. But the route, according to Klaproth, leaves it far on the right and crosses it where it has a W. and E. course parallel to the great river.

#### *Towns.*

Dr. Campbell's Giangtche is the Dzialdze of Klaproth, and both place it at the bifurcation of the Digarchi and Lassa roads. But it is Dr. Campbell's 12th and Klaproth's 9th stage. The other chief places on or near the route, in Klaproth, arè Nagardze, on, Runbung, off, Báidi, off, Chúchar, on, and Dunggar, on, the way. Of these the first is Dr. Campbell's Nagarchi: the rest occur not in his Itinerary. I have noted, at the foot of each page, as a note, the coincidences all along where such occur between Klaproth and Dr. Campbell.

#### *Rivers.*

West considerably of the route and of Phari, Klaproth has several streams, viz. Nio, Púng, Ghi, Lá, and Gó, all of which unite to form the Tehangtchú or river Teháng. This is the Changchoo of the Itinerary, quoad name, but not quoad position. And the Pá of Klaproth is probably the Má of the Itinerary, though there again the position of the stream cannot be reconciled. I have remarked as a note, on the name Chángchú, and also observed on the vague cluster of feeders arrayed by Klaproth, all which seem identifiable with the Má, whose remotest sources are under the great peak of Cholo, whence the Itinerary gives it 10 stages through Thibet to Phari. Klaproth makes Chumalári, not Himáchal, the great water shed of this part of Thibet: so also Turner.

The snowy range is here, no doubt, broken with inner and outer ridges, whereof Chumalári is (for us) the inner and apparently the most elevate, though Cholo is also of vast elevation. From Chumalári the rivers of the route flow south to India and north to the Sánpú. Klaproth's Bainomtchú is the Painomchú of our maps, which however sometimes confound it with the Pá or Gaddada of Rangpúr, whereas the Bainomchú runs due north to Giangchi and N. W. thence unto the Sanpú at Digarchi.

The Lá Lúng, Júng and Nian or Nan, which occur in the route, according to Klaproth, between Giangchi and Nagarchi, are not identifiable with any thing noted in the Itinerary, which however exhibits several small streams in similar positions.—B. H. HODGSON.

## APPENDIX No. 1.

*Darjeeling to Sikim Durbar.*

Places.	Miles.	Remarks.
Badamtam, . . . . .	4	The road runs along the ridge of Leebong to Ging, thence descends an offset or small spur of Leebong.
Rungeet River, ..	5	A steep descent all the way; Pine trees on the roadside about $\frac{1}{2}$ way down; cross the Rungno river $\frac{1}{2}$ a mile this side of the ferry over the Rungeet.
Namgialatchi, ....	6	The Rungeet, about 150 feet wide in the dry season and ten to fifteen feet deep, is confined here within a rocky bank on the east side. In the rains its bed is probably 400 feet.
Temi, . . . . .		One day's journey for a man with a light load.
Rumphoke, . . . . .		Ditto ditto ditto.
Shamphoo Ghat ..		On the Tcestah river. The road from Rumphoke is described as very rocky and the descent into the bed of the river almost precipitous.
Ryote River, ....		An easy march of ascent the greater part of the way.
Toomloong, . . . . .		Residence of the Raja; an easy march.

To the Sikim Durbar from the plains by the Mahanuuddi river.

Kooijhora, Reng, Rungula, Renick, Namgialachi, and thence as above.

N. B. The distances given are not correct, merely estimated ones.

## APPENDIX No. 2.

*Route from Toomloong, the Residence of the Sikim Raja, to Phari in Thibet.*

No.	Stages.	Remarks.
1	Tumloong to Kabi, day's journey, say 18 miles, .....	The Dikchoo river is crossed by a Sanga about 6 miles from Tumloong.
2	Lá Ghep, .....	Through mountains all the way, which are tipped with snow.
3	Chálápok, .....	Ditto ditto; snow on the mountains along this march.
4	Chala, .....	The top of the pass into Thibet; snow here at all seasons except in the height of the rains.
5	Tángzóó, .....	From Chola you begin to descend, and the road runs north descending almost all the way. Perpetual snow to the right and left.
6	E-tok, .....	A gradual descent all the way in the bed of and along the Tangzóó Nuddi. The Tángzóó rises close under Chola.
7	Choomba. ....	On the Machoo river, which is here as large as the little Ruugeet, and has a wooden bridge over it. The Machoo runs north and east.
8	Eusa, .....	Along the Machoo all the way.
9	Bukcha, .....	A considerable town on the Machoo. Houses on both sides connected by a bridge of stone-piers with wooden platform. The Sikim Raja lives here during the rains of every year and holds a Jageer in the neighbourhood from the Tibetan Government at Lassa.
10	To-yeu, .....	Also on the Machoo river.
11	Galling, .....	From Toyen to this place the road is over steep mountains, but in the direction of the course of the Machoo.
12	Gango, .....	A town on the Machoo. Houses of stone. A bridge of stone piers with wooden platform.
13	Sezeung, .....	A village on the Machoo. There are numerous villages along the river on this march.
14	Phari, .....	A town and district so named. The town is about two miles from the Machoo. It contains shops and traders, and the 4 Soubahs of the district reside in it. There are a few Tibetan soldiers quartered here.

The principal town in the neighbourhood of Khari is Riuchingong, a large mart, two marches east of Choombi. It belongs to Tibet. Here



the people of Bootan, Sikim and Tibet meet to trade. It is to the north of the snowy range. Pema is the first march from Choombi towards Rinchingong. At Pema there is a monastery of many Lamas and a library.

### APPENDIX No. 3.

#### *Divisions of the Route.*

No.		Marches.	Miles.
1	Darjeeling to Tumloong, the residence of the Sikim Raja. ....	8	60
2	Tumloong to "Choombi," the Sikim Raja's summer residence in Thibet. ....	7	84
3	Choombi to "Phari," a frontier mart frequented by Sikimites, Bootanese, Nipalese and Tibetans. ....	7	84
4	Phari to "Giangtchi," where the Digarchi and Lassa roads separate, the latter going to the eastward. ....	12	129
5	Giangtchi to the lake of Yamdo Yeum. ....	9	112
6	Yamdo Yeumtso to Yaroo Tzangboo (Sampoo River. ....	7	84
7	Yaroo Tzangboo to Lassa. ....	14	190
		64	743

#### *Great Mountain Ranges crossed on the Route.*

1st.—The Himalaya proper or great snowy range, visible from Darjeeling, crossed at "Chola," the 11th march from Darjeeling and 4th from Tumloong.

2nd.—The "Yeung range," which is crossed on the 14th march from Phari.

3rd.—The "Karoo range" covered with perpetual snow to the north of the pass, and said to be very lofty, is crossed on the 3d march from Yeungla.

4th.—The "Kamba range," covered with perpetual snow and described as the most lofty in Tibet, is crossed on the 8th march from "Ka-

roola." This range divides the "Digarchi" and "Lassa" jurisdictions. The Kambo range runs southwards, terminating at the great lake of Yamdo Yeum. It is not given in Pemberton's map, but in Mr. Hodgson's route from Nipal to "Tazedo," on the Chinese frontier. (As. Res. Vol. 17, p. 527.) The Kambha mountain is crossed at the 29th stage to "Kambha." This halting-place is doubtless the same as "Kambapazy" of my Itinerary, although in the latter it is 17 marches from Lassa: and by Mr. Hodgson's only seven. This discrepancy appears to arise in some degree from my route taking a northerly direction from "Kechoo," which is the next stage to Nithang. But the whole difference I am not able to account for. For instance, by Mr. Hodgson's route, "Nam" is only  $14\frac{1}{2}$  cos from Lassa. By mine the distance is reckoned at 40 cos. With regard to the estimated number of miles as taken from the number of stages or journeys, I do not lay any stress on the correctness of my calculation. The journeys have been taken at an average of 12 miles each: but there is no good reason, or any rule in Himalaya travelling to warrant this assumption as a general result, although I think that when the necessaries of food, wood, and water do not interfere, 12 miles is about the distance that baggage-carriers can travel over mountain-paths in a day.

At the rate of 12 miles for each stage of this itinerary the road distance from Phari to Lassa would be 504 miles. Estimating each stage at  $\frac{1}{3}$  less, or 8 miles, we should have 369 miles only. I am not prepared however to decide in favor of either of these results. My informants have been Lamas who have travelled the road in their vocation; I do not doubt that they have halted as often as noted in the route, but it is impossible to arrive at a correct estimate of distances from that fact; nor is it attempted to do so.

C. CAMPBELL.

*Darjeeling, March 22d, 1848.*

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*On the manufacture of the Matchlock of Koteli.*—By Capt. JAMES ABBOTT.

Finding my camp near the fabric of fire arms of Koteli in the Punjaub, I paid a visit to the fabric, which occupies two villages, about half a mile apart, and situate about 5 miles N. West of Sialkot.

Having witnessed the process of forging a Damask rifled barrel at Heraut, I did not anticipate any novelty on the present occasion. Moorcroft has most accurately described the same process in Cashmere ; but as he gives no figures in illustration, his account may not be perfectly intelligible to persons who are not familiar with the ordinary process.

The iron employed at Koteli is chiefly of the produce of Mundi, a hill district of the Julundhur, from a sandstone formation. That of Peshawur is also sometimes used. The iron appears to be well adapted to the purpose, soft, ductile, and tolerably free from impurity. And here it may be observed that the iron of India, not having undergone fusion, having been separated from the ore by the fire of a fuel free from sulphuric acid, and having been wrought into mass at the expense of infinitely more labor of the hammer than the iron of Europe, is generally pure and soft in proportion. The use of stubbs in this manufacture has never been dreamed of.

The first process is to hammer out a ribband of soft iron of the breadth of  $1\frac{1}{2}$  inches, being about 3-tenths of an inch thick at the one end and tapering to a thickness of one-tenth at the other. This ribband at welding-heat is beaten around a cylindric bar, or mandril of iron into a tube about  $2\frac{1}{2}$  feet in length, (See Pl. XXVII. figure 1.)

Three or four flat pieces of iron are then laid together and secured in place by wire, (see figure 2.) They are heated to white heat, and set upon the anvil edge upwards ; plates of block tin are laid upon them, which melting fill up the interstices and adhere to the iron ; sometimes about 2 rupees worth of silver are added. The whole at white heat is then submitted to the hammer until the tin and silver are incorporated with the iron. The mass is then worked into long slender square bars, of about one-tenth of an inch in thickness.

These bars or square wires being successively heated are by means of a vice and pincers twisted gradually throughout their extent, one-half

of the number being twisted to the right hand, and the other half to the left, (see figure 2.)

If now it is designed to make a twisted damask barrel, a pair of the twisted bars is secured side to side by wires, and at welding heat is wrought into a ribband, about 2-tenths of an inch wide by one-tenth in thickness. This ribband being heated is twisted spirally around the tube lately formed, (see figure 5.) Both are then covered with mud and being heated to white heat are beaten rapidly with light hammers, and are jumped upon the anvil, until the edges forming the two parallel tubes are welded together, and the tubes themselves have become one.

If not a twisted, but a straight damask is purposed, an inner tube is in the first place formed of plain iron ; as in the above process, around this tube some 16 or 18 of the fine twisted bars are laid lengthwise along the ribband tube ; a left and a right hand twist alternately, (see figure 6.) They are secured in place with wire, covered with mud, and being heated to welding heat, a mandril is introduced, and they are wrought together with light hammers, and jumped upon the anvil, the jumping bringing together the lips of the inner tube. The mud with which they are secured is to preserve them from atmospheric contact whilst at white heat. Considering that it is added whilst they are red hot, I should have supposed the decomposition of the water would have affected the iron even more than atmospheric air. But the workmen are the best judges, and they never omit the precaution.

Long barrels are generally made in two pieces which are welded together. The weld is barely discoverable upon examination and would never be suspected.

The barrel being now formed is to be bored, a process effected in the rudest manner by means of square bits, having at the reverse a hole or socket to receive a wooden lever. The matchlock barrel is wedged into a perforation in an upright post, and the workman, inserting the bit, leans his weight against it, and turns it with a sudden jerk. No precaution is taken to preserve the true centre of the cylinder, and if the bore prove straight or smooth it is a mere accident, for they have no other boring instrument than this. They were surprised to learn that our barrels are bored upon a lathe, and had never heard of the grooved-cylinder of steel, with which we finish the process.



The barrel is now piled smooth on the outer surface, and being carefully cleansed from grease by scouring with wood ashes, is set upright in a hollow cylinder of brass, which is filled with a solution of white vitriol in water. The cylinder is placed upon a slow fire, and in two days' the veins of the damask are developed in high relief.

Nothing can be imagined more elegant than the twisted damask of Koteli. It surpasses I think that of Heraut.

The straight damask being less tenacious than the twisted variety, should be made of greater solidity. Neither can be compared for effective strength with the gun barrels forged according to the English process, in which the barrel being formed, is twisted at welding heat upon the mandril. But, there is no doubt that the Koteli barrels are superior in strength as well as in beauty to ordinary matchlock barrels; for the whole of the metal becomes consolidated, and rendered fibrous by the intimate twisting of its several parts. The worst feature in the process is the want of care in the construction and finish of the inner surface. The rude measures employed are quite insufficient to assure us that the lips of the ribband have met in every part, or that the square bits turned with no velocity by the hand have effaced those irregularities of surface which endanger the life in loading. The bore, not being a true cylinder, and the ball being seldom wrapped in cloth or leather, it is impossible that the piece should carry with precision, or that with any given charge, it should range so far as a fuzil of the same calibre.

Matchlocks are almost universally constructed with an oviform chamber, which is harmless enough with the weak gunpowder of the bazars, but dangerous when English gunpowder is employed. It no doubt economises the charge. The barrel is made to swell abruptly at the breach to accord with the shape of the chamber, (see plate, figure 8.)

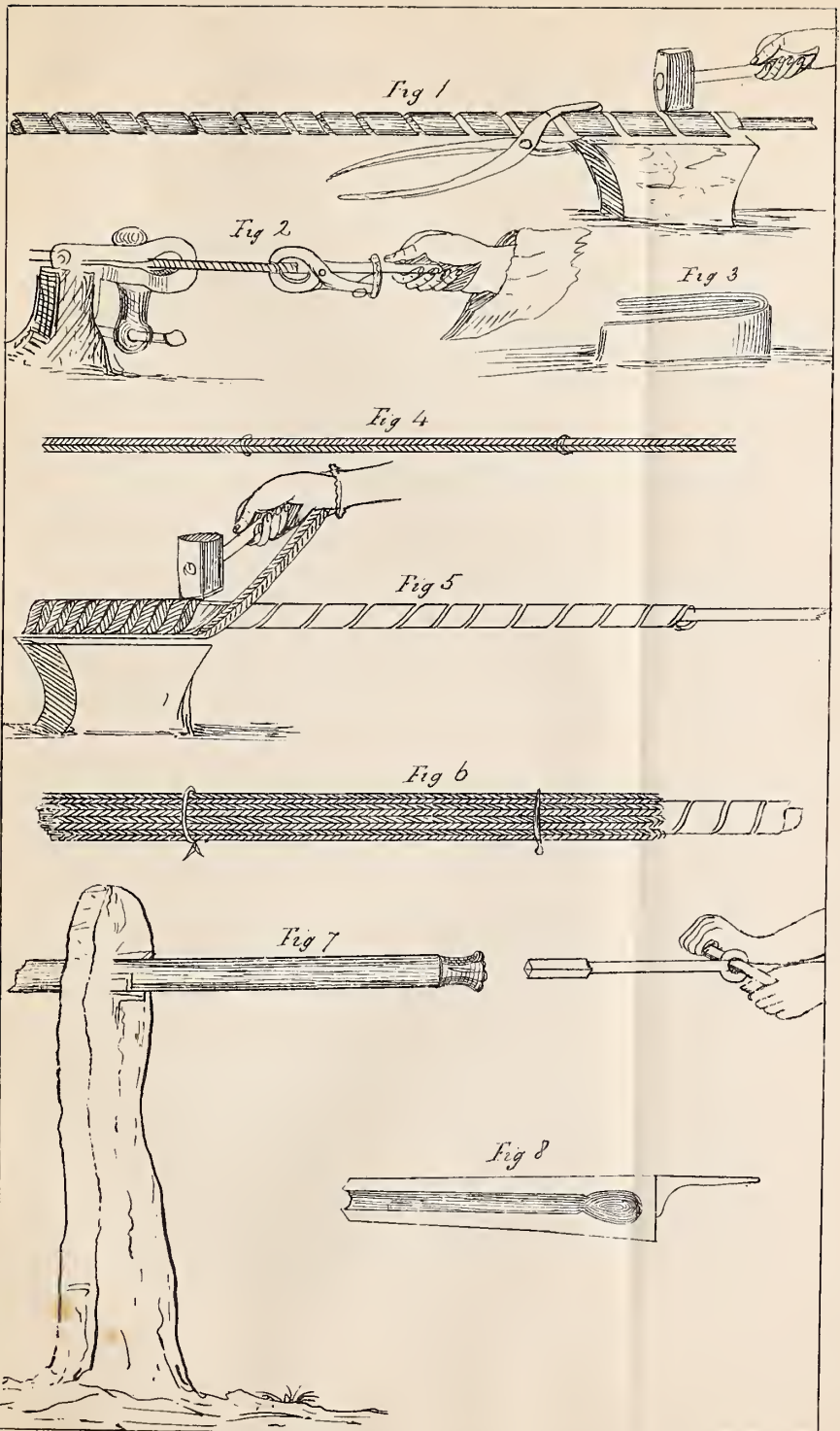
The matchlock of Heraut is generally rifled, a process unknown at Koteli, where however flint and detonator locks are made superior to those of most Indian fabrics. The rifling process is very rudely contrived at Heraut. In a cylinder of hard wood corresponding in length with a gun barrel, two parallel and spiral grooves are rudely chiselled; a collar of wood is formed in an upright post, opposite to another post, into which the barrel is to be jammed, and within this collar are two

short iron pegs, fitting into the grooves of the cylinder. A boring rod is then firmly attached to the cylinder, the cylinder forming both handle and guide. The boring bit is a cylindric rod rather thicker toward the extremity than elsewhere. Its thickest portion exactly fits the muzzle of the piece. It has a groove at the extremity, into which fits a small sharp wedge of hardened steel. When first inserted into the barrel, this wedge scarcely projects above the surface of the boring rod. It is now introduced into the muzzle, and the wooden cylinder is pushed forward by the workman who leans his weight against it. Of course as it enters the barrel, the spiral grooves of the wooden cylinder being guided by the fixed pegs in the collar give the rod and bit a corresponding spiral motion by which a spiral scratch is made in the interior of the barrel. The wedge is then slightly heightened and the scratch is thus deepened, until the workman considers it sufficient. This process is repeated until six or seven grooves have been formed. The Heraut rifle being carefully loaded with balls wrapped in leather or cloth is tolerably true.

It will be observed that all the beauty and advantage of the Koteli manufacture are attainable without any of the defects attending the rude treatment of the material in an Indian smithy. That is to say, the solidity and the fibrous consistency given to the iron, and the elegant damascene upon the barrels may consist with a perfect inner surface of cylinder. But such barrels could not safely be made so light as our own twisted barrel, a consideration of little moment as regards rifles in which weight is essential to steadiness.

The price of the best Koteli barrel without ornament, is about 15 rupees, or 30 shillings. The fabric is generally considered the best in India.

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*A Report of the Kohistan of the Jullundhur Doab.—By Lieut.  
WILLIAM HAWTAYNE PARISH, Bengal Artillery.*

1. The alternation, on so large a scale, of marl sandstone and conglomerate, has given rise to some marked features in the physical outline of these hills. Fertile valleys usually intervene between the separate ranges, whilst extensive table-lands sometimes crown their summits. This tract is composed of strata, dipping in general to the north-east, of sand, sandstone, calcareous marl, clay, and conglomerate, arranged in distinct formations, which observe a fixed and invariable order of superposition. It is evident that this country has undergone great changes in its physical geography since these strata were formed; for their direction and inclination have scarcely any relation to the existing drainage of the country. Also, for the more modern valleys, with the horizontal strata at their bases, as well as the hills which encircle them, are all posterior to them in date. Here are presented to us the evidence of a series of events of astonishing grandeur and magnitude, by which the original form and features of the country have been completely altered, but not so far obliterated, but that they may be restored in the imagination. It requires no great effort of the mind to recall its external condition and physical structure before these wonderful vicissitudes began, and whilst it was yet being formed in “the capacious bed of waters.” During this early period the various strata of which these hills are composed were gradually formed; and the vast beds of sand, marl, and gravel were deposited. Equal quantities, however, were not deposited in equal periods, for we have convincing proof of some of the strata having been formed in comparatively tranquil waters; whilst the materials of others were hurried along by strong currents and rapidly spread over the localities in which they are now found. In some places, stratified masses more than a hundred feet high, are made up of a succession of strata of fine sand scarcely an inch in thickness, and single layers of small waterworn pebbles; whereas, in other localities, we meet with beds of sandstone and conglomerate, not less than forty feet thick. This era of comparative tranquillity must have been followed, however, by one of violent convulsions, during which this country received the first impress of its present varied outline.

2. The plain of the Jullundhur Doab is bounded to the eastward by a long and narrow range of hills, whose highest ridge does not rise 1,500 feet above it. This outer range, distinguished by the name of the Pamrai-ke-dhar, but better known to Europeans as the Hoshiarpur range, extends from the right bank of the Sutlej, from nearly opposite Roopur, to Hajeepoor on the left bank of the Beas. Its direction is nearly N. W. and S. E. and its average breadth about eight miles. The Kohistan may be said to be divided into three great longitudinal valleys, more or less distinctly separated from one another and the countries beyond, by the following principal and nearly parallel ranges. Next to the outer range comes the Jaswan-ke-dhar, separating the valleys through which the rivers Soan and Beas, respectively flow. Next in succession to the eastward, is the Chungar or Joalamukhi-ke-dhar, forming the boundary between the Kangra and Joala valleys : and lastly, the Chumba range, which forms a snowy barrier between this country, known by the general appellation of the "Kangra district," and those of Chumba and Lahoul.

3. The Jaswan Dhoon extends from the Sutlej to within a few miles of Hajeepoor, where it is terminated by the junction of the Pamrai and Jaswan ranges. The river Soan, rising in Siba at the head of this valley, flows down the centre and empties itself into the Sutlej above Roopur. The surface of the Jaswan Dhoon maintains an almost uninterrupted level, but those of the other two have been considerably disturbed by the upheaval movements, and are consequently more or less subdivided into lesser valleys, which have received different local names. This remark applies more particularly to the Kangra valley, where not only the pergunnahs of Palam and Kangra are divided by a range of hills, which connect the Joala and Chumba ones together, but other low ridges have been thrown up, which traverse it in various directions.

4. Although wide longitudinal valleys intervene for many miles between the successive ranges, yet this uniformity in the physical outline must not be supposed to exist throughout the whole extent of this immense District, for it includes Sookeyt, Mundi, and Kooloo, and even a part of Lahoul. The three former lie to the east of the Secunder-ke-dhar, a spur from the Chumba range running direct to the southward. With the exception of the Chumba range, the hills to the west of this spur scarcely attain the elevation of 5,000 feet above the sea, whereas

the mountains on the opposite side are both rugged and lofty, many of the peaks reaching the highest altitudes. Moreover, even to the westward of the Secunder range this alternation of hill and valley has been in some places interrupted. Between Noorpoor and Juck-o-bur for instance, is an irregular mass of hills, intersected by numerous narrow and deep ravines. Such is the case also in the contiguous purgunnahs of Muhulmooree and Kumleh-gurh, where the low rounded hills of the former, rise up into bold peaks in the latter. But between the treeless hills of Muhulmooree and the Secunder range, a wide valley, named the Seel Khud, intervenes. This valley is some five or six miles in width : and its direction is north and south. There is however, another one, which requires particular notice. Before the Jaswan range reaches the right bank of the Sutlej, it divides into two ridges, and encloses a narrow valley, which is called the Kotlehr Dhoon. The eastern ridge goes by either the name of the Sola-singha ke-dhar or the Chowmukhi ke-dhar, called after two forts on its summit. The western one is called the Kotlehr ridge. I have thus given a short sketch of the position of each of the valleys on the western side of the Secunder range. A more detailed account would be foreign to the objects of this report ; and, moreover, could not be made intelligible without the aid of a map. It is almost needless for me to add that this part of the country has not yet been surveyed.

5. European geologists have three principal tests by which they determine the relative ages of any set of strata found in a country ; viz., first, mineral character ; secondly, superposition ; thirdly, organic remains. There is also a fourth proof of which they occasionally avail themselves, namely, the fact of any deposit containing the fragments of some pre-existing rocks. As I have not been successful in obtaining any organic remains, I have always endeavoured, whilst prosecuting my inquiries, to be guided by one or more of the remaining tests.

6. The two outer ranges, viz : the Hoshyarpoor and the Jaswan, are composed of strata of sand, sandstone and gravel, intermixed with variable proportions of clay, mica, and calcareous particles. These belong to the tertiary period, and I think, will be found contemporaneous with those of the Siwalik or sub-Himalayaean range, which has been traced from the foot of the Sikim hills in latitude  $26\frac{1}{2}^{\circ}$ , and longitude  $88\frac{1}{2}^{\circ}$  to Roopur, and now, should I be correct, as far as

Noorpoor. On the summits of these ranges are table-lands of considerable extent. The strata dip mostly to the north-east at angles varying from  $8^{\circ}$  to  $15^{\circ}$ . Amongst the strata are others of a harder and more durable sandstone, which being better able to withstand the effects of weathering project from the rest in smooth waterworn ledges.

7. From underneath this sandstone formation, strata of red and blue marls alternating with sandstone have been thrust up. These evidently belong to the great saliferous formation which probably crosses the Punjab from west to east. I have traced it from the banks of the Ravee, beyond Noorpoor, along the base of the Chumba range as far eastward as Mundi. Also from Nagrota, near Hurreepoor, across the Joala valley, into the Pergunnah of Kotlehr, where it makes its appearance in two high and parallel ridges (the Chow-mukhi and Kotlehr.) Between the Joala and Chumba ridges conformable beds of calcareous conglomerate are met with, which are occasionally interstratified with sandstone. The marls are of various colours. Besides the red and blue are others of a purple colour, as well as some approaching to a white. Others again are mottled, having greenish or bluish spots in a dark red base.

8. In consequence of the dip being generally either to the east or north-east, these lesser hills usually present steep precipitous banks towards the plains, and easy slopes in the opposite direction. The two outer ranges send forth numberless spurs to the north-eastward, which descend gradually to the level of the valleys. These hills have evidently been upheaved from a variety of centres, and the elevatory force has not been exerted equally over the whole district. This force, however, nowhere makes its appearance, excepting in the granitic peaks of the Chumba range. In consequence of these unequal disturbances there is a great irregularity in the dip, and although the average may be taken at about  $25^{\circ}$ , yet in different localities it varies from almost the perpendicular to nearly the horizontal: and although the strata dip in general to the north-east, we find them dipping also in the opposite direction: in fact, no two sections, observed a few miles apart, would, in these respects, give exactly the same results. As far as regards these local details, we find remarkable differences in the Pergunnahs of Kumleh-gurh and Kotlehr. At the head of the Kotlehr Dhoon the hills present a remarkably disturbed appearance. There, a sudden



break in the continuity of the Jaswan range, occurs. There the strata dip towards almost every point in the horizon and have also been thrust up perpendicularly into sharp angular points.

9. Partial formations of lignite are found in different localities, but they soon thin out and disappear. That at Futtipani has been almost entirely washed away by the Guj, during the last rains. After a very careful examination of the strata there, as well as elsewhere within the district, I feel convinced that no true coal measures will ever be found in these hills. The strata are of a more modern date than the carboniferous, and belong to the new red sandstone period. Carbonate of lime is abundantly diffused throughout, and frequently makes its appearance in the form of stalactites and incrustations. Cavernous masses of this calcareous matter are found in all the nullahs, and are used by the inhabitants for making lime. Clay-slate from the Chumba range serves them for roofing; and some of the sandstones afford excellent building materials. Boulders are generally employed for fencing and paving. Thermal springs are sometimes met with. That at Futtipani appears to maintain a uniform temperature of  $104^{\circ}$  F. throughout the year. I have taken it on several occasions, and at various seasons, and have always found it the same. The inflammable gas at Joala-mukhi is either carburetted or sulphuretted hydrogen, but most likely the former. There is also a saline spring close by the temple at the same place. The poorer inhabitants obtain the salt by evaporation, and use it for economical purposes. The water of this spring is said to possess medicinal properties, and has been successfully employed in the earlier stages of goitre. May it not possess this property from the presence of iodine? Boulders and erratics are abundant both on the hill slopes and in the water courses to the east of the Joala range: but with the exception of the bed of the Beas, and in the neighbourhood of gravel beds, they are nowhere numerous to the westward of that range. They consist of every variety of rock of which the Himalaya are composed.

10. The communication between the Jullundhur Doab and the Kohistan is maintained through the Naree and Cheenee Ghats. Both lead over the Pamrai range into the Jaswan Dhoon; and are situated, one a few miles, on either side of Hoshyarpoor. However, a good deal of traffic is carried on by the more circuitous route of Hajeepoor,

crossing the Beas at Rae-ke-puttun. But the principal thoroughfare between Lahore and the Kangra district is through Umritsur, Adeena-nuggur, Puthaukote, and up the bed of a nullah to Noorpoor ; or from Adeena-nuggur to Juck-o-bur, on the left bank of the Beas at Rae-ke-puttun, and from thence along the bottom of tortuous ravines through Dhamata and Nagrota to either Kangra or Joala-mukhi. In this district, as in other mountainous parts of India, coolies, bullocks, asses, and mules are employed in the transport of merchandise. I have, however, occasionally seen camels used for the same purpose. In this district also, are extensive plain and terraced lands at almost every elevation from 1,500 to 7,000 feet above the sea, which yield or are capable of yielding, all the usual productions of the plains, as well as those of the more temperate regions. Although a great extent of surface is under cultivation, yet large tracts may be seen over which the plough has not yet been passed, and which appear peculiarly adapted, both as to soil and situation, for the cultivation of the tea plant. These uncultivated lands, however, afford pasture for large herds of cattle, and numerous flocks of sheep : the latter are kept chiefly for their wool. During the cold months these flocks are brought down into the lower and warmer valleys, but are driven back again on the first approach of the hot season to the more elevated and temperate regions of Kooloo and Lahoul.

11. The principal crops are the sugarcane, rice, wheat, cotton, and gram (*cicer arietinum*.) The rice grown in the purgunnah of Kangra is considered to equal, if not surpass, the finest in Hindoostan. It is exported in large quantities to all the neighbouring districts, and is in great demand at Lahore. Sugar and wheat are also exported, but neither gram nor cotton is cultivated in sufficient quantities to supply even the local demands. The price of wheat has doubled since the occupation of the country by the British. Before that event a pukka maund could be purchased for one Rupee, but since then it has averaged two Rupees a maund. The wages of labour, and the prices of all commodities are on the increase. There is a great want of timber for building purposes ; the cheel and the mangoe being the only two available. The bamboo, however, is plentiful. Along the base of the Chumba range are large forests of cheel (*P. longifolia*), oaks (*Q. incana* ; and *Q. lanata*) and rhododendrons. Higher up are also very extensive forests, but of their composition I know nothing.

12. Kumlehghur and the valley called the Seel khud are bounded to the eastward by a high range known, as I said before, by the name of the Sekunder-ke-dhar. Its highest peak rises to an elevation of not less than 8,000 feet above the sea, and its general direction is north and south. The next in rotation, and also to the eastward, are the Gogar-ke-dhar, and the Tiri-ke-dhar, beyond which are an endless succession of ranges rising one above another until they attain enormous altitudes. These, forming the rugged tracts of Mundi and Kooloo are lofty spurs from the Chumba range, and run directly to the southward. With the exception of the Chumba the hills to the westward of the Secunder range scarcely attain the elevation of 5,000 feet above the sea. The communication between these lesser hills and the mountainous country beyond, is carried on through three principal routes. The most northern is by following the course of the Beas; the next, over the Gingeytree ghat, is the high road between Kumlehghur and Mundi-nugger; and the third is over the Secunder ghat: this last is the direct route from Muhulmooree and the Seel khud to Sookeyt.

13. The view from the Gingeytree ghat is very grand and imposing. Looking over Mundi and Kooloo one sees, at this season of the year, the summits of the nearer ranges of Goger and Tiri covered with a temporary mantle of snow: the brilliant whiteness of the latter forming a strange contrast to the dark green of the primeval forests of Pines and Cedar trees, with which their crests are adorned. Beyond these the rugged peaks of Kooloo, bound up in eternal frosts, are seen towering one above another in glittering splendour. To the north the snowy ridge of Chumba forms a magnificent limit to the scene. Turning to the westward, however, a delightful alternation of hill and valley meets your view: there one sees every variety of landscape that could be formed of wood and stream, hills and valleys. But the bare hills of Kumlehghur, and the wooded heights of Chungar and Assa-pooree, are insignificant indeed, when compared to the snow-clad peaks of Kooloo. (Assa-pooree is an isolated hill in the Kangra valley.) But of all other sights in these hills the most striking is a view of the Chumba range, when snow has fallen in the Kangra valley, and on the surrounding heights. No words could convey an idea of the sublimity of that range when thus clothed from head to foot in its gelid mantle. It rises ab-

ruptly to the height of 12,000 feet above the valley, and nothing intervenes to shut out the smallest portion of the range. Perhaps nowhere in the Himalaya a view of the like extent and magnificence could be obtained.

14. Sookeyt, the capital town of a district of the same name, is about 12 miles south of Mundi-nuggur; and is built in the midst of a jungle at the foot of high hills, and at the southern extremity of the Búll Dhoon. The Búll Dhoon is somewhat triangular in shape; the apex is towards Mundi-nuggur, and its base or widest part by the capital. This valley is about 7 miles wide at the base, and perhaps 10 long. It is bounded to the east by the Natchney-ke-dhar, apparently but a continuation of the Tiri range. The Sookeytee river rises near the principal town, and flows northwards down the centre of the valley; it then winds its way through a narrow ravine for two miles, and at last reaches the Beas at Mundi-nuggur. This last mentioned town is situated within the angle formed by the Sookeytee river flowing into the Beas, and is surrounded by high hills. Its position and general appearance put me very much in mind of Rampoor on the Sutlej. Sooltanpoor is the capital of Kooloo, and is likewise situated in a deep and narrow valley, on the right bank of the Beas, and within the angle formed by the junction of the Serbari with the former river. The communication between Mundi and Kooloo is kept up through the Gogar and Tiri Passes. The former may be about 6,000 feet, and the latter is certainly not less than 9,000 feet above the sea.

15. I cannot help pausing here to notice the very excellent roads the Rajah of Mundi has caused to be made throughout his territory. Although, no doubt the original motive was rather a selfish one, nevertheless his subjects cannot fail to be greatly benefited by them. These roads at first extended no further than just in and about the capital, and were made to enable the Rajah to drive about in his gig. However, the advent of the late Governor General, and the necessity for the Rajah returning his Lordship's visit, were the chief reasons for their extension. During his trip to Simlah he no doubt felt the advantages of good roads, and resolved to follow the good custom of constructing them. But whatever might have been his motives, he nevertheless deserves the thanks of every traveller, and his conduct being held up as worthy of imitation.



16. The Beas from Sooltanpoor flows direct to the southward for some miles, along the eastern base of the Tiri range, which it afterwards crosses, and flows westward towards Mundi-nuggur. Its course then is to the northward along the western base of the Gogar range. The river, however, turns again after a few miles to the westward, and enters the Kangra valley through a gap in the Sekunder range. At this point of its course, it forms the boundary between Bungall and Kumleh-ghur. It then flows by Ráj-ghirri, and Sujanpoor-Tira. Between this latter town and Nadoon it passes through the Joala range, and crosses that valley until it arrives at the base of the Jaswan range near Chumba ghat. Its course for the next few miles is along the eastern base of this range, and through the jaghir belonging to the Rajah of Hurreepoor Golehr. There, however, it makes more westing, and passing above the head of the Jaswan Dhoon flows for a short distance along the foot of the Hoshyarpoor range, and at last enters the plains near Hajeeppoor.

17. The new red sandstone formation becomes more complicated in Mundi. It there consists of marls, marly-slates, yellow magnesian limestone, salt, and gypsum. The marly-slates are either of a grey or dull red colour. The general dip of the strata is still to the N. E. although sometimes they are nearly perpendicular, or dip to the west. The salt mine of Drung is situated in the eastern face of the Goger range, about 10 miles to the north of Mundi-nuggur, and on the right bank of the Beas. The salt is seldom found clear and white in any quantity, but almost always, reddened by and mixed with a very large proportion of the argillaceous earth with which it is associated. It is obtained by driving a horizontal gallery into the side of the hill until the salt deposit is reached. The gallery, four feet square, is supported by spars of the Cheel or *Pinus longifolia*, and the inside is lined with bullock hides. There are also salt mines at Gumba near Beijonauth. No reliance can be placed on the contradictory accounts of the produce of these mines. The salt is generally purchased by the poorer classes, for those who can afford it always prefer that brought from the salt range near Peshawur.

18. If we proceed still further to the eastward, viz. across Kooloo in the direction of Mani-karn, we come upon clay-slates occasionally associated with limestone. The clay-slate is of great variety of colour,

as well as of texture. It is frequently soft, breaking up into quadrangular pieces. Sometimes, however, it is met with of a fine texture, of a bluish colour, and splitting easily into slates, when it is used as roofing slate. It derives occasionally, a shining and silky lustre from the minute particles of mica it contains. The clay slate is pierced in many places by veins of quartz, which are sometimes metalliferous, as is the case near the village of Jerree, situated on the left bank of the Parbati, and about five miles below Mani-karn. This vein had been worked, for the galena it produced, by the villagers for some months; but as they undermined they took no precautions to prevent the superincumbent mass from falling in. This circumstance occurred during the last rains, and the owners have not thought it worth while to re-open the mine; so the working could not have proved a very profitable employment. The limestone is bluish in colour, compact and hard; also partially diffused, when compared with the clay-slate. Sometimes it is non-effervescent, and also becomes silicious. Gypsum is found associated with the limestone in some situations, as near Jerree.

19. The Parba or Parbati flows along the base of a deep and winding ravine, the crests of the hills on either side rising some 4,000 feet above it. Their slopes are adorned with forests of Pines and the Deodar, and their summits are covered at this season of the year with snow. In many places the Parba is both wide and deep, but at Mani-karn it is a foaming torrent, bounding over the rocks in noisy cascades. This river comes from the eastward, and empties itself into the Beas a couple of miles above Bajoura. Mani-karn is situated on the right bank of the river, about 20 miles above this point. The place is celebrated on account of the boiling springs, which issue from the ground a few feet above the icy stream of the Parba. The springs are numerous, and the flow of boiling water copious. I regret not having had a thermometer graduated sufficiently high to have enabled me to ascertain the exact temperature of the water; but its heat is sufficiently great to enable the pilgrims, who annually resort there, to cook their rice in it. Whenever the wind lulls, the steam from these springs rises up in a perpendicular column full 100 feet high.

20. The hill, at the base of which Mani-karn is situated, is composed partly of limestone and partly of clay-slate. The dip is nearly perpendicular, and the strata are traversed by veins of quartz. The

water has an unpleasant taste, and deposits a large quantity of calcareous matter. The newly formed deposit from most of the springs is of a rusty brown colour, but that taken from one of them is of a brick red. In one place I remarked a mass of this singular deposit, nearly two feet thick, and hardened into a compact rock. This mass is divided in three distinct portions, or stratifications, and each is of about the same thickness. A spring, therefore, after having formed the first deposit, must have ceased to flow for a short period, and then burst out again, and so on until the three were formed; when it must have ceased to flow altogether, or have burst out in another spot. I have preserved a small portion of each, as well as of other rocks. The elevation of Mani-karn must be considerable from the circumstance of Cedars, the *P. excelsa*, the *A. Smithiana*, oaks and rhododendrons growing luxuriantly on the river's edge. The *P. longifolia* is also found there in great abundance.

21. I have mentioned in the former part of this report that boulders and erratic blocks are to be seen scattered in the ravines and water-courses as well as reposing on the hill sides. I will now endeavour to furnish some additional particulars regarding them. In the two outer ranges the table-lands and the beds of the water courses are generally covered with small waterworn pebbles similar in size and composition to those found in the adjacent gravel, from which they have evidently been derived. Boulders of every description and of a moderate size also cover the bed of the Beas. But it is only when we get to the eastward of the Jala range that we encounter granitic blocks of enormous dimensions.

22. Among the many mountain torrents that take their rise in the snows of the Chumba range, there is not one whose banks are not more or less covered with large erratics. These streams appear to have cut their way through several hundred feet of strata, leaving flat terraces at different levels and at corresponding heights on both banks. On these terraces and on the shelving banks granitic blocks are seen lying either in heaps or scattered about indiscriminately. They are also found on the more elevated lands, and reposing on the hill-slopes either partially embedded or lying on the surface.

23. Those found in the latter situations were probably deposited there before this country received its present outline: but the fact of

their being also found in heaps along the banks of the torrent beds seems to point to the probability of floods having occurred at certain intervals since that period. In this opinion I was confirmed when I came to examine the course of the Guj, from the Chumba range to the point where it flows into the Beas; and also when I saw the effects of a flood that occurred during the rains of 1845, when the latter river rose nearly 60 feet above its usual level. This flood lasted for 10 days, and did an enormous amount of damage to the villages and cultivated fields situated on the banks of the river. Between Sultanpore and Bajnoura considerable patches of land which, before this occurrence, yielded luxuriant crops, have since been abandoned, on account of the great number of boulders, the trunks of trees, and especially from the quantities of fine sand that were spread over them by the swollen torrent. In many places the river cut out new channels for itself, and in others, permanently enlarged its bed. In fact, throughout the length of its course in these hills the marks of this flood are everywhere traceable. The timber it brought down and deposited on the Government lands alone sold for 3,000 Rs.

24. The Guj rises near Rilloo at the foot of the snowy range, and flowing across the Kangra valley enters a tortuous ravine. Again, issuing from this at Nagrota, it joins another stream, in the Joala valley, and finally empties itself into the Beas. The bed of this stream at the base of the Chumba range is nearly choked up with blocks of granite. There they appear not so much waterworn; their edges are sharp and angular; and their shapes somewhat cubical. We find them also all along the banks, and in the bed of the stream as we proceed downwards to Futtipani. There the ravine, through which it flows, widens into a small valley about  $1\frac{1}{2}$  mile in length, and a  $\frac{1}{4}$  broad. There also gigantic blocks of granite are seen lying in confused masses, and heaped one upon another on the river's edge, also from 20 to 30 feet above the stream. Their present position in heaps, piled confusedly one upon another, indicates that this small stream either is, or has been, subject to occasional extraordinary inundations, at which periods it has transported these vast blocks, and thrown them up upon its banks: and although erratics are scattered singularly about the valley, and in the bed of the stream itself, yet one cannot but consider the fact of their being found in heaps and at different heights and distances along the



banks, shows that there has been not only one, but several inundations in succession, and, moreover, that some were greater than others. One cannot look upon each heap, but as the lasting memorial of a particular flood, marking the exact spot, where it had exhausted the greater part, if not the whole, of its transporting powers.

25. Now the difficulty is, how to account for the origin of these floods, which have left so many traces of their occurrence behind. There seems to be but one mode of accounting for them; viz: the escaping of pent up waters from the different valleys. It appears almost certain that for a considerable period after this country was first upheaved, large bodies of water were retained in the hollows formed between the ranges. I think there cannot be much doubt about the valleys having been lakes for a considerable period after their first formation; for all along the Jaswan Dhoon are thick horizontal deposits of loose sand and gravel of comparatively modern date. Also in the Kangra valley are thick beds of clay, or sandy-clay with large boulders embedded. These boulders are mostly of granite and clay-slate, and were derived, most probably, from the Chumba range. Now, as the pergunnahs of Rilloo and Kangra form the lowest portions of the valley in question, the course of the Guj would be one of the natural outlets, by which any body of water which remained behind, would escape: and the different bodies of water, escaping from time to time, would necessarily carry with them the loose materials, which in any way obstructed their progress, and would deposit them in the manner we now find them.

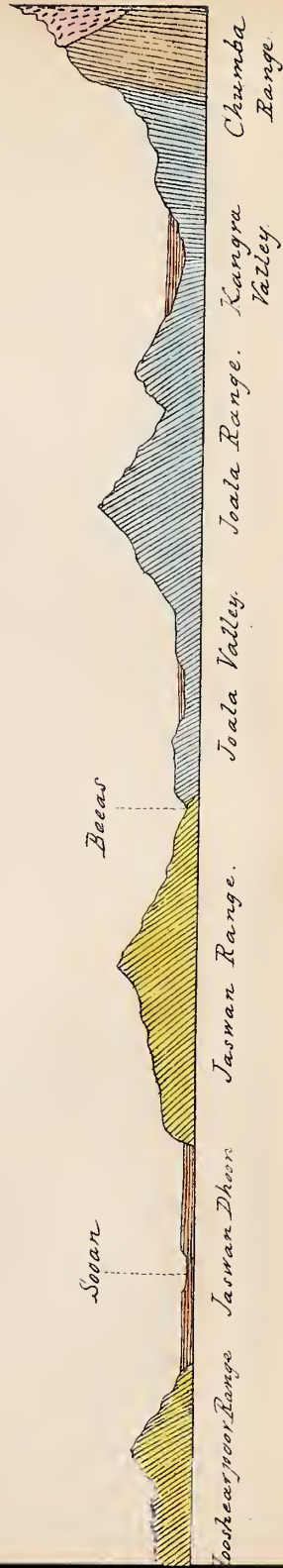
26. The boulders embedded in the clay are in every stage of decomposition. In many instances nothing but the faintest outline is left to mark the original size and form of the boulder. It then can only be distinguished from the matrix by the difference in the colour, and in the composition of the materials. When travelling in the hills near Simlah, I frequently remarked in the clay-slate certain circular rings, within which the materials were of a more sandy nature, and also much less compact, than those composing the indurated clay. I then felt puzzled to account for their presence, but now the striking similarity between those and the ones I have since seen in the softer clay of the Kangra valley, induces me to attribute to them a common origin.

27. Before concluding this report, I beg leave to make a few



remarks on the present condition of the people. Since the time when this country first became a British Province a new order of society has been gradually springing into existence. Heretofore the bulk of the inhabitants were kept in a state of abject poverty by a few Sikh Sirdars in whose hands all the power and the wealth of the land were concentrated. By these unprincipled tyrants every species of mental and bodily despotism were practised upon the unfortunate people. But a new order of things has been created; freedom and prosperity have marked the advent of the British. Life and property have been secured, and feudalism has been for ever abolished. Wealth is being more equally diffused, and a middle class is arising to unite the two extremes of society, which have unhappily too long existed. The foundation of a new order of society has thus been laid which will form in a short time the connecting link between the Government and the nation. The advantages to be derived from such a change are incalculable. To be convinced of its importance we have merely to trace the progress of English society from the Norman conquest to the present time. If we compare the time, when the English people were serfs, and the feudal Barons the very counterparts of the domineering Sirdars, to that of the present day, when the wealth and intelligence of the British nation are concentrated in the middle ranks, we cannot fail to be struck with the beneficial results of the change. On the other hand, the present condition of Spain affords us a melancholy illustration of a nation possessing only two ranks of society; where the haughty and indigent Hidalgo may be compared to our proud needy Suwars. It is wonderful however to reflect on what has been already accomplished for the benefit of the people inhabiting these hills since the conquest of the country. Slavery has been abolished; the rites of Suttee prohibited; and the prædial spirit checked:—in fact, all traces of barbarism have been swept away in the short space of two years. It has always been considered an indication of a rising country when the produce of labour, and the rate of wages are simultaneously on the increase; but here we have an additional proof of the improved condition of the country, viz. in the increase of cultivation. The waste lands are being gradually redeemed; and the men, who before were satisfied with a bare existence, are now looking after their domestic comforts, and are daily becoming more useful members of society. The people are mild and tractable,

Sandstone
  Saliferous.
  Clay slate.
  Granite





and not so fond of litigation, as their brethren of the plains. They are also more truth-spoken, and are not equally given to theft. However the physical structure of the country may act as a bar to the extensive perpetration of the latter species of crime, from the difficulty, not to say almost impossibility, of carrying away the plunder, and the consequent certainty of detection and punishment. I am sorry having to mention that the inhabitants of the higher hills are addicted to drinking large quantities of spirituous liquors. I am afraid too that the Lahouleees are sad drunkards. They pass six months of the year in Kulu, on account of the severity of the cold season in Lahoul, and spend the greater part of that time in dancing and drinking. But where is there a race, who possess not passions to be dreaded, prejudices to be humoured, and virtues to be developed? But if our justice be tempered with expediency, our principle with policy, and our benevolence with moderation and prudence, we may look forward to the future with glowing anticipations, and Britons may eventually become the dispensers of still greater blessings to these submissive people.

The annexed diagram may give the idea of the configuration of the surface, attempted to be described in the body of the Report, such as may be seen in passing from the plain of the Jullundhur Doab to the Chumba Range. It has been necessary, however, to exaggerate the inclination of the beds, and the heights of the several formations, as compared to their horizontal extent. The total distance may be taken at about forty miles.



*Memorandum by Capt. A. CUNNINGHAM, detailing the boundary between the territories of Maharaja Guláb Singh and British India, as determined by the Commissioners, P. A. VANS AGNEW, Esq. and Capt. A. CUNNINGHAM, of Engineers.*

In laying down a permanent boundary through a mountainous country it appeared to the Commissioners desirable to select such a plan as would completely preclude any possibility of future dispute. This the Commissioners believe that they have found in their adoption as a boundary of such mountain ranges as form water-shed lines between the drainages of different rivers, as detailed below.

2. In 1839, when Capt. A. Cunningham surveyed the Láhul district the boundary between the states of Kulu and Chamba was formed by the Nalda and Chukam Nullahs, two tributaries of the Chandrabhága, the one on its left and the other on its right bank. From the head of the Chukam Nullah the Commissioners determined that all the country to the eastward which is drained by the Bhága, the Chandrabhága and their tributaries belonged to the British district of Láhul; and that the boundary between Láhul and the Zanskár district was the snowy range (called Paralassa by Dr. Gerard) dividing the drainage of the Bhága and Chandrabhága from that of the Zanskar river, as marked in the Map. (Pl. XXIX.)

3. Beyond the Bára Lâcha Pass to the eastward, the Commissioners found that there was an old well known boundary stone, called Phálangdanda, which marked the limit between Láhul and Ladâk. This stone is noticed by Moorcroft (I, p. 220). It stands in the midst of an open plain on the right bank of the Yunam River. As there was no known or recoguized boundary mark on the other side of the stream, the Commissioners selected a remarkable cream-coloured peak, called Turam, as the northern limit of the British territory on the left bank of the river. As this peak is situated at the end of one of the spurs of the great snowy chain, already determined as the northern limit of the Láhul district, it forms a natural continuation of the boundary line from the westward. The bearing of the Turam peak from the Phálang-danda is  $9^{\circ}$  to the northward of west.

4. As it appeared that the country to the eastward of the Phálangdanda belonged to Piti, the Commissioners determined that the boundary between Piti and Ladâk on the westward should be the Yunam River. A straight line was accordingly drawn from the Phálang-danda to the junction of the first Nullah on the right bank of the Yunam, from which point the Yunam River forms the boundary as far as the junction of the Cherpa or Cherep river.

5. Almost due north-east from this junction there is a remarkable square rock on the top of the hill, which from its resemblance to a fort has received the name of Lanka. This curious and well known peak was selected as another fixed point in the boundary, to which a straight line should be drawn from the junction of the Cherpa river. Beyond this to the eastward, the Commissioners, adhering to the



principle which they had first laid down, determined that the whole of the Cherpa valley and its tributaries belonged to the British Government; and that the snowy range on its right bank which feeds all the northern affluents of the Cherpa river should be the boundary between Ladák and the British district of Piti. This same range extends towards the east past the southern end of the Chu-Mureri Lake, where it forms the well known boundary between Ladák and the Chinese territory. The Commissioners therefore determined that the boundary between Ladák and Piti should continue from the head of the Cherpa along this same range to the Chinese boundary; thus including within Piti all the streams which water that district, and giving to Ladák all the streams which water its southern district of Rúrchú.

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*On the Oology of India :—a Description of the Eggs, also Nests, of several Birds of the plains of India, collected chiefly during 1845, '46. By Captain S. R. TICKELL, Civil employ.*

Oology is a part of Ornithology which has either engaged very little attention in India; or has been passed over unattempted from the difficulties attending the collection of eggs and nests,—difficulties arising in a measure from the season of the year in which they are chiefly procurable, but principally because very few birds build and breed in this country, except in the remotest parts of jungles, which are during the rainy season almost inaccessible from the density of vegetation. In the limited collection I have been able to make, native agency has of course been employed; and to avoid adopting the mistatements, ignorant or wilful, of my “deputy collectors,” has cost me no little patience and sundry cross-examinations. Many evil disposed boys have, for instance, brought me the eggs of Mynas over and over again, placed in wonderful nests of their own constructing, to be passed off as the produce of the rarest species of birds. An old woman on one occasion paraded some tame ducks’ eggs, as just procured from the nest of a species of wild fowl, at that epoch probably busy breeding in Iceland. And several similar attempts at duplicity have occurred, for the sake of enhancing the price, of which the wary Oologist must take good heed.

In the following description the size of the eggs is expressed by the

lengths of the long and short axes in inches and fractions of an inch, and the term "ordinary" is applied to the shape of the common hen's egg, as typical.

1. *Haliaëtus Macei*.—The "Kokna" or "Oogoos" of the natives. Nest large—massive—about 3 feet in diameter—composed of sticks, twigs, and lined with hay; concavity shallow; usually in the fork of a Peepul or Bur tree, and near water; eggs two; shape ordinary; rather blunt; color plain white; long axis  $2\frac{13}{16}$ . This Eagle never makes the slightest attempt at defending its nest—a striking contrast to the marvellous tales we read of, concerning the Golden Eagle in the Highlands of Scotland, &c. ! Lays in December and January.

2. *Gyps bengalensis*.—"Gid" or "Girnee." Nest very large, massive, shapeless, irregular in size, being sometimes disproportionally small, composed of branches and twigs lined with hay and down, placed high up on large trees, near or quite at the summit. Egg usually one—ordinary shape, or rather lengthened; size  $3\frac{3}{8} \times 2\frac{7}{16}$ ; colour dull brownish white. Lays in December or January.

3. *Strix longuembris*, Jerdon: *Str. javanica* apud Latham. Little or no nest—at most a little grass scattered and smoothed down—in the midst of heavy grass jungle, always on the ground. Eggs usually four in number, round, pure white; size  $1\frac{3}{4} \times 1\frac{3}{8}$ . November or December.

4. *Orthotomus longicauda*.—Nest the size of an orange; globular, of fine hay, scantily lined with a cobwebby cottony substance, attached to the stalk of an annual weed, the adjacent leaves of which are made to adhere to the sides by numerous irregular stitches, formed by passing the hay in and out through the leaves, one of which is usually bent over as a roof to the entrance. Eggs 4 in number. Size  $\frac{13}{10} \times \frac{9}{10}$ , blunt shape; colour pale greenish blue, with irregular patches, especially towards large end, resembling dried stains of blood, and irregular broken lines scratched round, forming a zone near the large end. August.

5. *Hydrophasianus sinensis*.—"Dulkookra." Nest large, flat, thick, of weeds and coarse water mosses placed on reeds and floating on the water; upwards of  $1\frac{1}{2}$  foot in diameter. Eggs 4 to 6 or 8. Spindle-shaped, being very broad at big end and tapering at smaller size;  $1\frac{3}{10} \times 1\frac{1}{20}$ ; color plain bronze or olive brown. August.

6. *Bucco asiaticus*, v. *cyanops*.—"Suttra." Nest hemispherical, 5 inches in diameter, coarse; outer covering of tendrils and dry grass,

with the cottony blossoms of jungle grass plastered on : lining of fine hay. Eggs 4; shape ordinary, size  $1\frac{7}{20} + 1\frac{1}{20}$ ; color plain white, soiled with faint brownish here and there. Found in a Mowhooa tree, near jungle. August.

7. *Ploceus philippinus*? *Pl. baya*, Blyth.—("Baya.") Nest very large; pendent; from 2 ft. to  $1\frac{1}{2}$  ft. in length, attached to branch by a long neck; body of nest ovo-globular, the whole solid except a spherical space near bottom, which is entered from below sideways and contains the eggs, &c. Nest composed entirely of fine hay, without any other lining; sometimes two or three joined together. At all times several on the same tree, which is chiefly the palm, or Khujoor, or any large tree of spreading branches and scanty foliage, especially if leaning over water. Eggs 6 to 10 in number, pure white, shape ordinary, size  $\frac{27}{32} \times \frac{9}{16}$ . August.

8. *Ardeola leucoptera*, (*v. malaccensis*, Auct.)—Common brown Paddy-bird ("Chota bug.") Nest large, 1 ft. in diameter, shallow, coarsely made of dry twigs, generally on a mango or any medium-sized tree near water; often in company with nests of the Crow and Myna. Eggs 6 or 7, much rounded and broad; pale bluish-green. Male egg  $1\frac{9}{16} \times 1\frac{7}{2}$ ; female egg  $1\frac{7}{16} \times 1\frac{3}{16}$ . August.

9. *Herodias bubulcus*, *v. russata*, &c.—("Gow bug.") Nest as in preceding; often several on the same tree. Eggs 2 or 3; narrower and longer than in *A. leucoptera*; same colour; size  $1\frac{25}{32} \times 1\frac{5}{32}$ . August.

10. *Columba (Turtur) suratensis*.—"Googoo.") Nest large, flat, of dry twigs, lined with hay; on a Mowhooa or Mango tree. Eggs 2 to 6; ordinary, rather blunt, pure white: size  $1 \times 1\frac{1}{8}$ .

11. *Turtur risoria*.—Indian Ring-dove, ("Pundook.") Nest and eggs as in preceding, but larger =  $1\frac{3}{16} \times \frac{7}{8}$ . August.

12. *Dendrocygna arcuata*.—Whistling Duck ("Sillee" or "Saral.") Nest large, flat; when on the ground made of reeds, flags, &c. hidden in the rank grass, sometimes half floating on the water. Often on the bole of a mango or peepul tree—at the base of a large fork, or in a hollow on the summit of the trunk, when it is composed of twigs, with hay. Eggs numerous, from 6 to 8 or 10. Shape a little lengthened, with both ends blunt; pure white with a blush of faint rose-colour and clouds of opaque white; size male egg  $2 \times 1\frac{7}{8}$ ; female egg,  $1\frac{13}{16} \times 1\frac{1}{2}$ . July and August.

13. *Nettapus coromandelianus*, v. *girra*.—"Fixbaggonets"—"Gy-ree" of the natives. Nest and eggs resemble those of preceding in locality and all other respects, except size, which was not taken by measurement, but is of course much smaller. Eggs very numerous, once 14 were brought me. This duck builds more constantly in trees than does the whistling teal. A pair built on a mangoe tree in the town of Poorulia, and must have had to carry their young at least  $\frac{1}{2}$  mile to the nearest water!

14. *Sarcidiornis regius*.—"Nukwa hunss.") "Knobbed Goose." The eggs of this bird have also frequently been brought me, but I did not take the measurement; they are about as large as those of the domestic duck, pure white; from 8 to 10 or 12 in number. Nest frequently on the hollow top of a decayed trunk, always in jungly country and near the water. They are hatched in August and the ducklings, which are early deserted by the parent birds, wander about during the ensuing cold weather in a small flight by themselves; they are then of a dusky colour above and dull white beneath; the gander has no trace of a frontal knob till after the cold season. I have had this bird as well as the "fixbaggonets" and "whistling teal" hatched by domestic hens, but they are never thoroughly tamed.

15. *Hemipodius bengalensis*, Blyth, MS. ("Salooi goondroo.") The larger Button Quail. No nest but a hollow scraped in the ground and lined with a little hay; generally in a field of "Goondlee" (a kind of small grain like millet,) or in short jungle grass. Eggs 4; size  $\frac{1}{16} \times \frac{3}{4}$ ; very round, but rather pointed at smaller end. Brownish white thickly, mottled darker; with larger spots and blotches of dark brown thickly sprinkled over the large end half, and small specks of the same elsewhere.

16. *Pratincola caprata*.—"Pid-da.") Nest hemispherical; 4 in. diameter; of fine grass, built on a bush in waste jungles or reedy spots. Eggs 3; size  $\frac{3}{4} \times \frac{9}{16}$  shape ordinary; colour pale greenish white, sprinkled equally with brown spots. May.

17. *Cisticola cursitans*.—"Khér ghooosa.") Little common Grass Warbler. Nest hemispherical; rather large; 5 inches diameter; thick. Entirely of soft grass with its downy ears. Eggs 5; ordinary; blunt,  $\frac{5}{8} + \frac{1}{2}$ , opaque white, sprinkled with rusty specks, which conglomerate in a zone round large end. Builds at the bottom of thick clumps of reeds. June.



18. *Malacocercus Earlii*.—"Burra phenga." Nest hemispherical; of grasses, rather loosely interwoven: generally on bushes in jungle. Eggs 2 to 4;  $\frac{2}{3}\frac{9}{2} \times \frac{1}{1}\frac{1}{8}$ ; rather lengthened shape; clear full verditer blue. June.

19. *Malacocercus caudatus*, (Dumeril).—"Chota Phenga." Nest precisely the same as foregoing. Eggs also, but size somewhat less,  $\frac{1}{1}\frac{3}{8} \times \frac{5}{8}$ . (The bird was snared and brought to me with the nest) June.

20. *Mirafrā affinis*? Jerdon.—"Leepee." Nest ordinary, of grasses. 4 inches diameter, placed on the ground, under shelter of clods, tussocks of grass, &c., in fallow fields or open patches in jungles. Eggs 3 or 4, ordinary, rather lengthened,  $\frac{1}{1}\frac{3}{8} \times \frac{9}{16}$ , dirty ashy-white, with stains, smudges and specks of dusky, ashy, and rusty-brown.

21. *Mirafrā phænicura*.—"Koowan leepee." Nest flat, shallow, circular, 4 inches diameter; placed in meadows, in long grass, which it entwines over the nest, leaving only a small passage open. Eggs 4; lengthened, blunted;  $\frac{7}{8} \times \frac{5}{8}$ ; dirty greenish-white, thickly sprinkled with pale and dark brown confluent spots. June.

22. *Sturnus contra*.—"Ram bunnee" of the Bengalees. "Goolia Sharo" of Hindustanees. Common Pied Myna. Nest large, circular, shallow, sometimes a foot in diameter, of twigs, grasses and down, high up in Mangoe, Mowhooa, or Doomoor trees; often on bamboos. Eggs 5,  $1\frac{1}{8} \times \frac{1}{1}\frac{3}{8}$ , ordinary—clear greenish verditer-blue.

23. *Caprimulgus albonotatus*, mihi. "Jungle Nightjar." "Chuppa." No nest. Eggs laid on the bare ground, in bush jungle, generally 2; shape blunt and both ends nearly equal. Male egg  $1\frac{7}{32} \times \frac{1}{1}\frac{5}{8}$ , pale fleshy-clay colour, sprinkled with patches of darker brownish-red; female egg  $1\frac{3}{16} \times \frac{7}{8}$ , paler and redder.

24. *Edicnemus crepitans*.—"Thick-kneed Plover." "Khurma." Nest a small patch of grass, moss, and thistle or seed down, about 5 inches diameter, placed on the gravel, in jungle, without attempt at concealment. Eggs 2;  $1\frac{1}{1}\frac{3}{8} \times 1\frac{7}{16}$ ; shape ordinary, rather blunt, pale clay colour, splashed and blotched with dark brown. June and July.

25. *Drymoica sylvatica*?—"Tót rungee." Nest very neat, compact, deep, globular; 3 inches in diameter. Coarse grasses outside, fine grass within, the edges cleanly defined; attached to reeds, rushes, &c. Eggs 3, blunt; size  $\frac{3}{4} \times \frac{9}{16}$ . Fleshy white, with patches and scratches as of dried blood; darker spots showing through shell. June.



26. *Nectarinia asiatica*, (v. *Cinnyris mahrattensis*, Sykes.)—"Joogí joogí." Nest bulbous, bottle-shaped, with lengthened neck, suspended from the end of a small branch, in thick bushy trees, gardens, banks of tanks, seldom far in jungle. Nest soft, composed of little bits of leaves, grasses, fine twigs and chips of bark woven together with a fibrous substance resembling tow. Entrance by a small circular hole at bottom and side lined neatly with seed down; length 8 inches. Eggs  $3\frac{1}{2}$  inch long, rather pointed; pale greenish white, minutely speckled dusky, which forms a clouded zone round larger end.

27. *Sarcophorus bilobus*, (Gm.)—"Chota Teet'huree." No nest. Eggs found on the ground exposed; 2 in number brought me; shape blunt and round;  $1\frac{3}{16} \times 1$ . Sandy or pale clay colour thickly blotched over with very dark brown clouds and spots. June.

28. *Lobivanellus goënsis*.—"Teet'huree." "Indian Peewhit." No nest. Eggs 6 to 8 or 10, on the ground, amid bushes, &c. in jungle or among the bushes on sand islets in large rivers; shape round and pointed at lesser end. Male egg  $1\frac{1}{16} \times 1\frac{3}{16}$ ; pale clay, blotched as No 27, but not so thickly and closely. Female egg  $1\frac{5}{8} \times 1\frac{1}{8}$ , with smaller spots more thickly sprinkled over.

29. *Eudynamys orientalis*.—"Koël" or "Kokeel." June 1845. 4 eggs brought me, placed in a Crow's nest; blunt at both ends.  $1\frac{1}{4} \times 1\frac{5}{16}$ ; dull sap green, sprinkled all over dark brown, especially round large end. There was one Crow's egg in the nest and both are strikingly similar in appearance.

30. *Corvus splendens*.—"Khunwa," Indian Crow. Nest large, irregular, some are flat, others deep, composed of branches, twigs and hay. Eggs 4 or 5. Lengthened and both ends rather sharp;  $1\frac{9}{16} \times 1\frac{1}{16}$ . Sap green, clearer and bluer than Koël's egg, and markings more speckled dark and light. June.

31. *Lanius phænicurus*.—"Khèr Khetta." Nest in large bushes or thickets, shallow, circular, 4 inches in diameter, rather coarsely made of fine twigs and grass. Eggs 3 ordinary;  $\frac{2}{3} \times \frac{2}{3}\frac{1}{2}$ ; pale rose colour, thickly sprinkled with blood red spots, with a darkish livid zone at larger end. June.

32. *Cypselus palmarum*.—"Tal chutta." Nest was not brought me. Eggs  $\frac{3}{4} \times \frac{1}{3}\frac{2}{3}$  (immensely large for such a bird); rather blunt, white, with rather large spots of deep claret brown, most numerous at big end. July.

33. *Cypselus affinis*.—"Babeela" or "Ababeel." Nest large, flat, irregular, of fine straw, hay, and feathers, closely interwoven and kept together with a glutinous substance supplied from the bird's salivary glands, generally glued against some beam in a veranda or out-house, in some remote corner. Eggs 3, shape lengthened, spotless, white. Male  $\frac{2}{3}\frac{2}{2}\times\frac{9}{16}$ ; female  $\frac{2}{3}\frac{1}{2}\times\frac{9}{16}$ . July.

34. *Passer domesticus*, var? *indicus*, Jardine and Selby.—"Gooria" or "Moonia." House Sparrow. Nest very large, about 8 inches in diameter, irregular shape, made of any material at hand, generally straw outside, finer grass and feathers within, with bits of cloth, cotton, tow, paper, &c.; in outhouses, under thatched eaves, loopholes in walls, down wells, and (rarely) holes of trees. Eggs 5 to 8 or 9;  $\frac{2}{3}\frac{5}{2}\times\frac{5}{8}$  ordinary, pale ash, thickly sprinkled with dirty rusty brown; breeds in March, June and October.

35. *Geronticus papillosus*.—"Karankool." Black Curlew of sportsmen. Nest very large, flattish; of branches, twigs, and hay, on large limbs of the Seemul and such lofty trees. Eggs 2, ordinary, pure opaque white. Male  $2\frac{3}{16}\times1\frac{9}{16}$ ; female  $2\frac{1}{16}\times1\frac{9}{16}$ . July.

36. *Anastomus coromandelicus*.—"Tont'h bhunga." Nest large, flat, thick, of branches, twigs and grass within; found in numbers together on large limbs of lofty trees, chiefly the Seemul, together with nests of Kites, Night-herons, Black Ibises, &c. Eggs 4; rather lengthened; dull white. Male  $2\frac{1}{3}\frac{5}{2}\times1\frac{3}{4}$ ; female  $2\frac{3}{8}\times1\frac{3}{4}$ . July.

37. *Grus antigone*.—"Surhuns," Syrus of Europeans. These eggs have been frequently brought me in Singbhoom and also in Manbhoom, where they are tolerably common, but I omitted taking the measurements and describe the egg from memory; (I have one in my collection, to which I cannot at present refer.) Length about  $3\frac{1}{2}$  by  $2\frac{5}{8}$ , but the male egg is longer than the female, colour plain white, not quite so pure as in the domestic fowl; without spot or mark of any kind; generally two in the nest, which is a raised heap of grass, rushes, &c. placed in heavy grass jungle in retired places, generally at the foot of hills covered with forest. July.

I cannot understand the difference of colour between my specimens and that of an egg presented to the Society, said to have been laid by a Syrus, in Calcutta, and described by Mr. Blyth in a recent number of the Journal. I can only say I describe the egg from upwards of a

dozen brought me at different times by natives, together with young ones in all stages.\*

38. *Podiceps minor*.—"Pundoob." Dobchick. Nest very large, flat, of interwoven weeds, grass, water mosses, &c. floating but moored to reeds, &c. Egg solitary (?), very large for the bird, pointed at both ends;  $1\frac{3}{8} \times 1$ . Dirty white, marked with pale brownish stains. July.

39. *Coracias bengalensis*.—"Tâs" or "Neel Khunt." Indian Roller. Nest rather large, thin, scanty, of twigs and grasses within, loosely put together, on medium-sized trees, generally at summits and near water. Eggs 4 or 5. "About the size of a Dove's," broad but rather pointed at ends, full deep Antwerp blue. July.

40. *Halcyon smyrucensis*.—"Much runga." Nest not brought me. Eggs 3, very round,  $\frac{27}{32} \times \frac{23}{32}$ ; semi-transparent and fleshy white.

41. *Acridotheres tristis*.—"Buunee" or "Saloo," common *Mynar*. Nest large, coarse, of twigs, and grass within, on trees or in out-houses, verandas, &c. Eggs 4,  $1 \times \frac{27}{32}$ ; rounder than eggs of *Sturnus contra*—pale greenish blue. July.

42. *Dicrurus macrocerus*: *D. albirictus*,† (Hodgson). "Finga," "King crow." Nest made on summits of thick bushes, or midway up medium-sized trees. Concealed in the trunk; hemispherical, 6 to 8 inches in diameter, of coarse grasses, fibrous roots lined with finer grass and wool. Eggs 3 to 5, ordinary,  $\frac{15}{16} \times \frac{11}{16}$ ; dullish white, with scattered blots and spots of pale brown, especially at blunt end. June.

NOTE. Several of these nests and eggs were brought to me and by some averred to be of *Lanius nigricaps*, Franklin. But, unless satisfactorily known to the contrary, I am inclined to attribute them to the Finga.

43. *Ciconia leucocephala*: *C. bicaudata*, (mihi). The "Manikjore." Nest large, flat, of branches and twigs and lined with hay, sometimes fragments of snakes' skins—high up on lofty trees, such as the Seemul. Eggs 3, ordinary,  $2\frac{3}{4} \times 2$ ; plain white.

44. *Pycnonotus bengalensis*.—Common "Búlbúl." Nest small, hemispherical, 4 inches diameter, of fibrous roots and fine grasses. Eggs

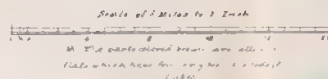
\* The egg described by me was one of several produced by the female of a pair of tame Sarrus, and there can be no mistake respecting it.—E. B.

† It is surely better to adopt this most characteristic specific than adhere to the old "macrocerus," which to this hour it is impossible to say, applies to this bird or to "annectans," (Hodgson). "Balicassius" being equally confounded with the two.

MAP  
of the Districts of  
**RUKCHU, LAHUL AND PITI,**

*Showing the Boundary between the Territories of*

**Maharaja GULAB SING**  
*and*  
**BRITISH INDIA.**







3 or 4 ; ordinary, rather lengthened ;  $\frac{1\frac{3}{8} \times \frac{9}{16}}$  ; pale rosy white, thickly and equally sprinkled with confluent blotches of claret colour or purpurulent rusty.

45. *Gallus Bankivus*.—"Bunkookra," "jungle moorug." Of these I took no note, as they are precisely the same as the eggs of the Bantam fowl. The jungle hen lays in clumps of bamboo, dense thickets and such inaccessible places, and makes a rude but comfortable nest of straw, dried weeds and leaves, round which the dust is scraped and heaped up. The eggs are generally 6 to 10 in number.



*On the Ruins at Putharee.*—By Capt. J. D. CUNNINGHAM, Political Agent, Bhopal.

In the paper which I previously addressed to you on the subject of the antiquities within the limits of the Bhopal Agency, and which was published in the number of the Journal of the Asiatic Society for August, 1847, I mention (p. 761), that at Puthâree near Oodehpoor (between Saugor and Serouj), I had heard of the stone representation of the Boar Avatâr of Vishnu. My interest in the place was further roused by what I learnt verbally from Dr. Spilsbury and Lieutenant-Colonel Sleeman, and I was thus glad that I should have an opportunity of visiting the place in the course of the present cold season. I was at Puthâree towards the end of last month, and I found not only the image of a boar, but a series of antiquities possessed of some peculiar characteristics and highly deserving of accurate description and delineation.

Puthâree is said, according to local tradition, to have been anciently called Barnuggur, and to have been ruled over by one Muheeputch, who had seven hundred and fifty sons, in honour of each of whom he reared a separate temple to Mahâdeo, the remains of all of which may still, it is asserted, be found. Barnuggur is not an uncommon name, and is evidently a vernacular corruption of the more classical form of the word, *Varaha-nagara*. Muheeputch is evidently Muheeput, i. e. Mehput as now written or pronounced, and the present state of the ruins attest that at one time the temples must certainly have been numerous, if not so many as tradition represents. No date is assigned

to the Rajá's reign, but the style of architecture seems to point to the early centuries of the Christian era.

The place is situated in the midst of isolated groups of low sandstone hills, and the locality includes two good sized reservoirs formed mainly by damming up the outlets of rainy season streams. The most important series of remains is to be found along the banks of the larger reservoir, while the present town and the smaller lake are distinguished by a single pillar and a solitary temple. Intermediately there are ruins of fanes of different kinds, with the fragments of various figures scattered about ; and one of the isolated hills seems also to have been occupied by devotees, or by some of the members of the religious establishments of the place.

*The Jain Temple on the larger reservoir.*—On the western banks of the larger reservoir there is situated a Jain temple, perhaps comparatively modern. It forms a hollow quadrangle with sides of probably 120 feet in length, but its only peculiarity seems to be that the ranges of cloisters are surmounted by alternate pyramidal spires of the usual Indian kind, and domes of the common Mahometan outline. The sculptured figures are inferior, and the architecture of the building rude in the extreme.

*The Brahmanical Temples on the larger reservoir.*—On the northern bank of the larger reservoir there are several Brahmanical temples, two of which deserve notice. One, a simple shrine, Buddhist in shape, contains an elaborately sculptured representation of Vishnu as the Boar. The statue is about  $4\frac{1}{2}$  feet high, it is covered with figures disposed in ranks ; it has a diminutive woman hanging by the tusk of the God, and the remains of a serpent may be traced on the ground on which it is standing. It evidently illustrates the same religious sentiment, or train of ideas, as the corresponding figures at Ehrin and Oodehghir, described in my previous paper, (Journal Asiatic Society of Bengal, Aug. 1847, pp. 755 and 760.) The other temple is ruinous, but one chamber still contains detached figures showing Vishnu in the several forms in which he is supposed to have become successively manifest. During the hurried inspection which I made of these figures I noticed nothing differing materially from other types, and I neither saw nor could hear of any inscriptions. Both temples however appear to have been of the flat roofed Buddhist type, and not pyramidal.

*The Temple called Gurrulmurh, on the larger reservoir.*—The most remarkable of the monuments at Puthâree is the temple called “Gurrulmurh,” situated on the southern side of the larger reservoir, and the legend respecting which is as follows. A certain Gâdree or Gareree, i. e. a shepherd, tended the flocks of a Rishi named Gaianâth, and after many years of faithful servitude he was prompted by his wife to solicit a favor or reward. The Rishi filled the end of his blanket or plaid with barley and told him to be happy. The shepherd however disregarded the gift as valueless, and threw it away, or placed it to one side. His wife’s curiosity could not be satisfied without seeing what had been received, nor would she believe that the saint would bestow any thing in vain. She searched, and her faith was rewarded by finding a heap of gold instead of a heap of corn. Her gratitude moved her to build and endow a temple, and hence, says the tradition, the name of Gurrulmurh, i. e. the “Muth” or temple of the “Garêrun” or Shepherdess.

There are the traces of a square inclosure with sides of about 350 feet, and of a pillared entrance or gateway on the northern face. Within this there is a raised terrace forming a second inclosure of about 140 by 115 feet, with a second pillared gateway opposite the first leading on to the platform. The temple itself is in the centre, and it seems to form a kind of Greek cross of perhaps 30 feet by 27 in base, with the exception of the projecting portico or entrance, which has a depth of 24 feet. The temple is pyramidal, and it may be as much as 65 feet in height. (Pl. XXVI. fig. 1.) Opposite the centre of three sides, and also opposite the four corners or re-entering angles of the cross, there are small flat-roofed temples at a distance of about 40 feet, or on the edge of the raised terrace. The centre of the fourth side is occupied by the entrance to the terrace itself, and the general plan of the whole is as given in the accompanying sketch.

*The Gateway of the Gurrulmurh temple.*—The outer gateway of all deserves no particular notice, but that leading up to the terrace at once strikes the observer as bearing a strong resemblance to the gateways of the Buddhist “Tope” at Sâtcheh near Bhilsa. There is indeed but one architrave instead of three, but the sculptures at Sâtcheh show such a gateway with two architraves only, and the existing entrance at Puthâree seems thus merely to give a further simplification of the

style. The gateway shows likewise an advance generally in the art of architecture; the lower pillars have subordinate capitals and bases formed of Vases filled with flowers, curving over the sides, and the shafts are made octagonal and are further adorned by bells suspended by ropes. The upper columns have each the aid of four "caryatid" women at the sides, and of four lions rampant at the corners, in upholding the architrave, as at Sâatcheh;—and further, as there, the ends of the architraves support couchant lions, between which there is also placed a central ornament. The upper portion however of the rectangular doorway or opening has been formed into a pointed arch of a more or less compound form, by the insertion of curved stones, which do not enter into the construction—that is, the arch is false, as are the archways of the fronts of Mahometan mosques, at least in design, and it would indeed almost seem as if the pointed arch of Mussulman architecture originated in an adaptation of the existing styles of the time of the Moghul invasions. The accompanying sketch (Pl. XXVI. fig. 2,) gives a tolerably accurate representation of the entrance, but the archway has been restored by guess, as fragments only of the curved stones are to be found. It has however been restored according to an existing example at Ghearispoor, which is *prima facie* architecturally Buddhist, and the re-entering angles of the double curve seem further to afford room for the projecting forelimbs of the lions. The immediate entrance of the temple seems only to deserve remark, as being composed of the same description of pillar upon pillar as in the terrace gateway, the lower pillars having however capitals of elephants' heads, and as having miniature stone screens on either side, which appear to be modifications of the stone railing of the Buddhist "Tope" at Sâatcheh. At the beautiful temple of Mahádeo at Oodehpoor, previously described, there are similar lateral screens.

*The detached fanes of the Gurrulmurh temple.*—These shrines seem to have been formed to contain one image only, with a small pillared portico in front. Their external dimensions are about 12 feet by 9 in base, and 10 in height, excepting that to the rear, which may have been of two stories. They are flat-roofed. The door-posts are elaborately carved agreeably to the custom of the present day in many parts of India. These fanes are mostly ruinous, and the images have been broken or removed. In one the idol seems to have been Ganêsh, and in another there is a rectangular pedestal so formed as to allow the



water of oblations to run off by a projecting spout, but whether this pedestal sustained a representation of Mahádeo, or another God, is not apparent. The figures of the ornaments and the general style seem Buddhistic.

*Outside of the Gurrulmurh temple.*—In a niche in the rear, externally, of the temple and in niches on either side, are to be seen seated figures of Ganêsh. Among the sculptures of the front may be noticed representations of Ganêsh, and of the Fish and Boar Avatars of Vishnu, but there is also a figure of a seated Buddha, and another, of apparently the same manifestation, seated. There may be noticed combats between elephants, and also combats between men on foot and elephants, the former aided by horsemen. There is also a four-armed female figure mounted on a lion. On either side of the doorway there are groups of three female figures, succeeded by a four-armed God, which is *sculpturally* a modified Buddha. The limbs of this Deity are marked with the Sunk or Chukker.

*Interior of the Gurrulmurh temple.*—The interior walls of the temple are plain, and the pyramidal roof with its flat ceiling is in fact supported by four unadorned pillars. Opposite the doorway there appear to have been, first, an image of three feet basis, resembling that of Buddha in style, but which is now in fragments, and may have represented Gunêsh, and secondly, a group about  $6\frac{1}{2}$  feet by  $4\frac{1}{4}$ , and  $2\frac{1}{2}$  feet over all, which is tolerably perfect. The group is in every way one of an unusual kind in India. It consists of a female figure about the size of life, recumbent on a couch with the left hand partly supporting her head and with a child lying by her side. The figure is artistically of fair workmanship and proportions, and is enveloped in a close fitting drapery which scarcely conceals the shape. Behind the couch there are five smaller female figures, standing, and apparently representing menial attendants. Two or more of these hold Chowrees, and one holds what seems to be a purse of money or a bag containing articles of utility. The couch is covered with a flowered cloth; it has cushions to help to raise the figure and it is supported by four carved legs, by two couchant lions and by a seated human image. Tradition declares the figure to be that of the Garerun who built the temple, and adds that the shepherd missing his wife one day was told that her heart's desire had been accomplished, a copious spring had overflowed and formed a lake close to her temple, and that she herself having done



with the world had been metamorphosed into stone and had become the guardian of the fanc of her own erection. It is not clear what myth or what theogonic idea is represented by the group in question, especially when its importance with reference to the temple is considered. In addition to the figures above described there may be seen lying on the floor of the temple a small Lingam with a well proportioned female head carved in relief on one side. No inscriptions could be seen or heard of.

*General conclusions with reference to Gurrulmurh temple.*—The general impression left upon the mind by an examination of this temple, is that while it is religiously a bráhmancial edifice, it is architecturally and sculpturally an adaptation from Buddhism, and serves to show how old material forms are preserved amid mental changes and the revolutions of sentiment. The plan of the *Tope* is upon the whole readily traceable; the hemisphere is indeed stretched into a pyramid, and the four entrances with tutelary Buddhas are here represented by three exterior niches containing figures of Ganêsh, and by the one interior image opposite the one entrance which every building must at least have. The temple is surrounded, as at the Buddhist Sâatcheh (and as in the purely Saivic Oodehpoor,) by other smaller fanes, and the whole is inclosed by a wall with a regular entrance. In an artistic sense, the superiority over Sâatcheh is greater in an architectural than in a sculptural point of view. Its architecture is much inferior to Oodehpoor, but both in a religious and artistic aspect it seems to stand half way between the “*Tope*” at Sâatcheh and the perfect temple at Oodehpoor, or to show faith and skill dwelling upon old shapes while imbued with new ideas.

*Bheem Sen's Guj or Luth.*—Near to the western edge of the smaller lake stands the wand or pillar, now called of Bheem Sen. (Pl. XXVI. fig. 3.) It is composed of a single block about 36 feet in height and  $2\frac{1}{2}$  thick. The shaft is square in section for a height of eight feet, and it then becomes circular. The capital consists of a grooved round disc surmounting a plain square one, and it originally seems to have sustained a group of figures, of which a portion only of one now remains. The capital is perhaps a modification, and if so, one for the better, of the capitals in existence, at Ehrin and Sâatcheh, and the original shape of which, by the way, seems accurately preserved in the pillar at Bettiah near Benares, and in the remarkable columns still in existence near Caubul and Ghuznee. On one side of the square portion of the shaft there is a long inscrip-

tion much obliterated, and of which I failed to make even a tolerable impression. I had however two transcripts subsequently made partly by guess of the first two lines, which are sent herewith, and which may enable you to say whether it has been previously published.\*

*Temple of Siva.*—Near to the column is a ruinous temple dedicated to Mahádeo, among the sculptures of which may be traced figures of Gunêsh, and representations of the combats of animals, and apparently also of the worship of the Lingam.

*Ghir Guj, or Mahádeo's temple.*—Of the numerous ruins to be seen between the two lakes, there may be noticed a temple said to have consisted of seven diminutive stories, and to have been dedicated to Mahádeo. In a niche outside may be seen a figure of Ganêsh seated. On the door-jambs of the temple, pilgrims or others have cut a few sentences, transcriptions of which are inclosed, and one of which contains the date of apparently 103 Sumbut. Near to the temple there is lying a colossal figure seated cross-legged, said to be of Bheem Sen, and which has a lofty flat topped ornamented head-dress such as may be observed in many Buddhist sculptures. Near to it again is another colossal figure also seated cross-legged, but with a natural covering of wooly hair on the head.

*Kootkeswar Mahádeo's temple.*—Another of the ruins is a temple termed of Kootkeswar Mahádeo, containing a figure of Siva with three heads and six arms, and a Lingam with a thousand representations of the symbol carved upon its superficies.

*Temple of Siva on the hill.*—Half way up one of the hills there is a cave in the sandstone rock, the front of which is partly blocked up with pillars and other fragments of a building not now further traccable. The cave contains a Lingam, with a well shaped human head carved on each of its four sides, so to speak. The fragmentary pillars have the subordinate capitals formed of vases with flowers falling over the sides, as elsewhere noticed, but the workmanship is superior to that exhibited in the other remains. On a separate stone may also be seen a symmetrical group of figures, the central portion being formed of a lotus flower displayed, supported after the manner of armorial bearings, by two birds. The birds are flanked by two elephants, and the elephants again are flanked by two sphynx-like figures, that is figures with human heads, and the bodies of animals.

\* These are wholly unintelligible to our pandit.—EDS.

*Temple of Jogheswar.*—On the top of the hill there is a small temple dedicated to Jogheswar, which contains two groups of figures much mutilated. One group seems to have consisted of a central human idol with apparently a foot placed on the Boar Avatâr of Vishnu. A lion has also fixed upon the hinder quarters of the Boar, while the head of the hog would further seem to have been cut off, were it not that the detached head lying in front of the Boar rather resembles that of a bull. In front of the Boar there is a small human figure kneeling, and seemingly on the defensive. The other group has a lion in the centre with perhaps a human figure behind, and with an unmistakeable bull's head lying at its feet. A woman is represented in front as if impaled, and another behind is shown as if falling from a height. The impression left on the mind is that the groups represent the triumph of the lion manifestation over Saivism and also its supercession of the Boar Avatar.

#### ADDENDUM.

*Ghearispoor.*—At Ghearispoor (described in the Journal of the Asiatic Society of Bengal for Aug. 1847, p. 756) on one of the beautiful architectural remains to be seen there, I observed two inscriptions, on a re-examination which I had not before noticed. Transcripts and impressions are forwarded herewith, one showing a date 1039 Sumbut (982 A. D.), as also the transcript of a third inscription, if a few letters may be so called, on the same building.

*Oodehpoor.*—At Oodehpoor (Journal Asiatic Society of Bengal, Aug. 1847, p. 757,) the industry of a man sent by Captain Ellis of Jhansee to copy inscriptions has succeeded in bringing to light one in good preservation on a detached stone lying near the town wall. A transcript is annexed, showing a date 1229 Sumbut (1172 A.D.)

*Bhojpoor.*—As the allusion made to the inscription on the pedestal of the Lingam on the temple to Siva on the edge of Raja Bhoj's lake now dry (Journal Asiatic Society of Bengal, Aug. 1847, p. 743), may mislead some into the belief that the inscription is contemporary with the building, I take this opportunity of saying that although really at first disposed to regard it as coeval, I am now satisfied after another inspection, that it is not so. The date however of the inscription does not affect the argument advanced in connection with "*Achintea Deoj*," or the sign of the incomprehensible.

*Camp viâ Sehore, Bhopal, February 14, 1848.*

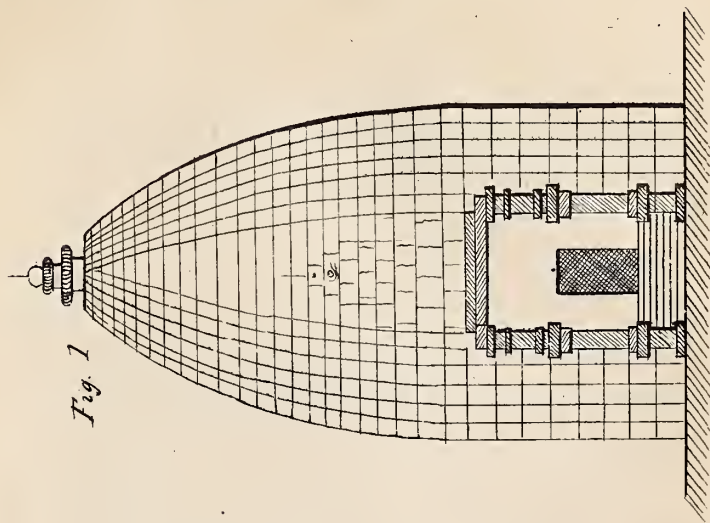


Fig. 2

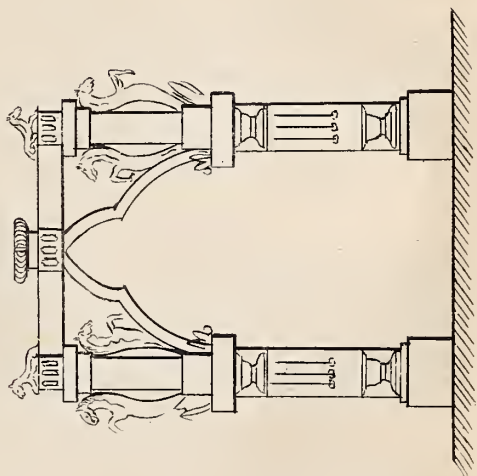
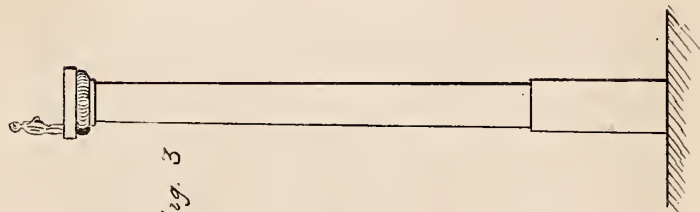


Fig. 3







*A Tabular view of the fall of rain and other remarkable Meteorological Pheacmena in Calcutta from 1829 to 1847. By Capt. H E. L. THUILLIER, Officiating Dep. Surveyor General.*

A table indicating the number of Rainy days and the quantity of Rain fallen in Calcutta in every month, for the last 19 years, from January 1829 to December 1847 inclusive.																										Memoranda of the most remarkable Gales, Hurricanes, and Thunder storms that have occurred in Calcutta, for the last 19 years.						
Years	January.		February.		March.		April.		May.		June.		July.		August.		September.		October.		November.		December.		Years.	Total fall of rain in each year, in inches.	Total number of rainy days in each year.	Lowest state of Barometer	Date.			
	Number of rainy days	Quantity of rain in inches.	Number of rainy days.	Quantity of rain in inches.	Number of rainy days.	Quantity of rain in inches.	Number of rainy days.	Quantity of rain in inches.	Number of rainy days.	Quantity of rain in inches.	Number of rainy days.	Quantity of rain in inches.	Number of rainy days.	Quantity of rain in inches.	Number of rainy days.	Quantity of rain in inches.	Number of rainy days.	Quantity of rain in inches.	Number of rainy days.	Quantity of rain in inches.	Number of rainy days.	Quantity of rain in inches.										
1829	2	0.32	..	..	..	..	1	1.40	10	3.59	19	18.13	21	9.29	21	10.11	12	8.89	7	2.63	2	0.18	..	..	1829	59.91	94	not registered	{ 1819 }	26th April, .....	A most severe thunder-storm with large hail stones and rain at 6 P. M., 1 men killed by lightning, 2 in the Fort, 2 in Town.	
1830	..	..	..	..	..	8	1.72	4	5.54	9	12.71	13	11.21	9	10.54	19	10.72	10	5.08	1	4.81	..	..	..	..	1830	65.28	76		not registered	13th June, .....	At 3 1/2 A. M., a hurricane attended with a violent thunder storm, which lasted some time.
1831	..	..	3	1.60	3	0.58	6	5.30	5	2.56	13	19.06	11	7.07	16	10.37	13	5.28	7	5.08	..	..	..	..	..	..	1831	56.90	77	not registered	26th May, .....	A fresh or light gale.
1832	..	..	1	1.65	3	3.10	1	2.36	4	3.45	9	1.26	12	1.97	20	16.11	10	1.88	6	8.15	1	1.46	..	..	..	..	1832	58.72	70	not registered	21st October ....	A violent gale, the Duke of York, stranded on a paddy field 2 1/2 miles, south of Hindjilee Pagoda, Sunderbans inundated.
1833	1	0.05	3	0.48	..	..	4	3.57	5	11.80	8	3.04	18	13.04	16	12.63	13	8.19	3	3.64	..	..	3	3.02	1833	60.56	71	not registered	21st May .....	A violent gale, the Duke of York, stranded on a paddy field 2 1/2 miles, south of Hindjilee Pagoda, Sunderbans inundated.		
1834	..	..	1	0.16	3	1.61	3	2.25	3	4.12	15	15.90	12	8.79	18	16.29	13	6.76	15	14.52	..	..	..	..	1834	64.73	83	29-032	1833	21st May .....	A violent gale, the Duke of York, stranded on a paddy field 2 1/2 miles, south of Hindjilee Pagoda, Sunderbans inundated.	
1835	..	..	..	..	2	1.46	3	1.81	8	10.20	11	13.92	18	19.66	17	13.26	13	9.61	5	6.18	2	3.34	..	..	1835	45.50	82	29-024	1831	3rd August ....	Blowing a gale with incorrect esti. quantity of Rain = 5.10 Inches.	
1836	..	..	2	2.16	1	0.25	No obs	0.98	3	3.07	11	5.73	16	7.93	23	10.12	16	9.82	6	4.68	1	0.03	1	0.07	1836*	14.61	81	29-710	1835	11th May .....	A remarkably heavy fall of rain (12 inches) for about 3 hours, from midnight to 3 A. M., Esplanade inundated, being one foot under water - a goat drowned in a gentleman's compound in Chowringhee, in the rain-flood.	
1837	..	..	1	0.12	2	0.36	5	1.13	4	2.13	18	11.76	21	10.13	20	11.03	14	8.16	1	7.52	..	..	..	..	1837*	52.99	89	29-657 (5th)	1837	4th 5th & 6th Oct	A gale between Rajmahal and Ghazipur, destroyed about 100 native boats on the river. (No fall in Calcutta.)	
1838*	..	..	1	0.12	2	0.36	4	1.13	15	7.81	13	9.12	21	11.77	16	9.15	15	18.05	1	0.59	3	1.06	..	..	1839	61.97	98	29-398	1838	8th April .....	Severe hail storm and whirlwind at Balliaghata, and in the vicinity of the Salt Water Lakes, caused much injury to life and property amongst the peasants.	
1839	6	1.31	3	0.23	1	0.31	4	1.31	15	7.81	13	9.12	21	11.77	16	9.15	15	18.05	1	0.59	3	1.06	..	..	1839	61.97	98	29-398	1838	19th October ...	Blowing a gale, ceased by the evening	
1840	..	..	..	..	2	0.41	3	0.80	11	8.05	16	13.05	15	9.01	19	21.11	16	1.94	1	1.81	..	..	..	..	1840	59.41	83	29-602	1837	20th September .	Blowing a gale from 3 P. M. to Noon of the following day.	
1841	3	0.85	1	0.24	3	0.76	3	3.26	14	5.31	16	7.03	24	11.09	24	13.06	13	11.59	2	3.16	..	..	..	..	1840	60.25	99	29-131	1840	1st May .....	A gale from noon to midnight	
1842	..	..	..	..	2	3.76	5	3.73	7	1.42	20	26.21	19	3.61	21	21.96	16	1.08	9	5.96	1	0.19	1	0.76	1841	76.11	111	28-278 (1 p.m.)	1842	3d June .....	A dreadful gale and hurricane at Calcutta, extended to a little this side of Moon-glyer. Violent wind morning from N. E. tending Northward, in the forenoon from N. and North-west, afternoon from N. and N. E., and from 1 P. M. changed from S. E. to S. W., from which quarter nearly it blew all night. Several trees (but) unparalleled damage done to the shipping, buildings, and native craft on the river - 10 or 12 of the former, mostly all of the latter, completely sunk almost every pukka house in town was injured, strongest trees torn up by the roots and blown down. (No lightning, no thunder.) Fall of rain 6 1/2 inches.	
1843	3	1.67	5	0.61	5	1.20	5	2.42	13	5.33	12	8.61	25	10.18	23	25.06	16	1.08	9	5.96	1	0.19	1	0.76	1842	76.11	110	29-398	1841	11th November ..	A severe Earthquake at Calcutta at 1 1/2 m. in 10 P. M.	
1844	1	0.22	1	0.08	1	0.22	6	3.15	12	7.14	11	13.13	23	13.72	11	16.91	12	5.02	7	4.99	..	..	..	..	1841	73.86	106	29-475	1841	21st August ....	From 9 P. M. to the following morning blowing a Gale with a heavy fall of rain without intermission. Fall of Rain 12 inches or more - rain-gauge overturned.	
1845	3	1.10	3	0.61	1	0.17	11	7.30	6	1.12	17	10.66	18	12.00	27	15.36	9	1.80	8	5.86	..	..	..	..	1817	60.92	106	29-475	1846	21st September .	A gale at night.	
1846	1	0.82	6	1.40	3	2.30	3	0.57	4	2.19	19	12.14	21	20.02	20	13.26	17	9.97	12	10.76	1	0.71	2	1.52	1817	72.36	112	29-350				
1847	..	..	..	..	..	..	9	2.31	8	1.79	19	12.01	19	15.69	19	15.09	16	10.05	7	5.86	2	5.59	1	0.05	1817	72.36	110	29-475				
Average of 19 Years																										63	90					
																										Inches.		days.				
Note. During the period embraced in this Table (19 years) two Rain Gauges were in use, one, on the roof of the House; the other on the ground. The quantity indicated by the latter is herein inserted. From a glance at the column for "May," it appears that in the years 1829, 1830, 1835, 1839, 1840, 1841, 1843, and 1844, the rainy season set in, in that month. In those years, wherein there is little or no fall of rain in the month of October, the succeeding winter is, in general, found to be productive of much sickness. The unprecedented fall of rain in June 1842, is worthy of notice!																										30-010	1842	11th November ..	A severe Earthquake at Calcutta at 1 1/2 m. in 10 P. M.			
																										29-350	1841	21st August ....	From 9 P. M. to the following morning blowing a Gale with a heavy fall of rain without intermission. Fall of Rain 12 inches or more - rain-gauge overturned.			
																										29-475	1846	21st September .	A gale at night.			

Note. During the period embraced in this Table (19 years) two Rain Gauges were in use, one on the roof of the House; the other on the ground. The quantity indicated by the latter is herein inserted. From a glance at the column for "May," it appears that in the years 1829, 1830, 1835, 1839, 1840, 1841, 1843, and 1844, the rainy season set in, in that month. In those years, wherein there is little or no fall of rain in the month of October, the succeeding winter is, in general, found to be productive of much sickness. The unprecedented fall of rain in June 1842, is worthy of notice.



*Appendix to Lieut. MAISEY's Account of the Antiquities of Kálinjar.*

We have now the satisfaction of completing Lieut. Maisey's admirable account of Kalinjar, by publishing the Sanscrit inscriptions, with a translation of so much of them as was intelligible, prepared by Bábu Sáro dáprasád Chakravartí, and have only to regret their very insignificant historical value. We must not omit to acknowledge the very great assistance afforded by the careful transcripts made by Capt. Kittoe from the original fac-simile impressions.

## No. 1.

नमः शिवाय । तत्पूर्वे नीविमोक्षे अवणकुवलयेनाशु निर्व्याप्य दीपं  
चूडाचन्द्रप्रकाशप्रसरविधुरया शैलभर्तुर्दुहित्रा ॥ ध्वान्तभ्रान्त्या भजन्त्या  
नवघनपटलश्यामलं कण्टकाण्डं दत्ताश्लेषप्रमोदः प्रगुणयतु मुदं मेदुरा-  
मोश्चरो वः । १ । देहार्जानद्वकान्ताकुचकुसुममयो भालनेत्रानलार्चि-  
पीनोष्मा मौलिखेलन्मुखरसुरनदीनीररम्यो जगन्ति । स्फीतोत्तंसेन्दु-  
कान्तिर्विरददतिट्टाच्छादनव्यक्तशीतः शंभुर्भूषास्थिकुन्दप्रकरपरिवृतः  
पातु सर्व्वर्त्तु मूर्त्तिः । २ । देवे द्यूतजितं प्रयाचति पशं देवी दिशत्युत्तरं  
न स्वामीति निगद्य कल्पितरुषः श्रान्ताः स्वकान्तासखीः । हारभ्रान्तिह-  
ठावह्यफणभृत्फूलारदूरद्रुताः प्रेक्ष्यालीकसमाधिभेदि हसितं कुर्व्व-  
न्हरः पातु वः । ३ । दास्येऽहं परिरम्भणानि कितवद्यूते जितानि त्वया  
मिथौतसुखमिदं यतः शतमहोरात्राणि तत्रावधिः । इत्युक्तः शिवया  
निशादिवसकञ्ज्योतिर्मयाक्षिद्वयद्रागुन्मेषनिमेषकोटिपटलव्यग्रो हरः  
पातु वः । ४ । चिन्तयत्यनुदिनं ध्यानापदेशादयं येनामुं मुनयोप्यना-  
दिनिधनं ध्यायन्ति धौतस्पृहाः । इत्यङ्गात्सकरे हृते गिरिजया या तत्र  
पद्मासना । प्येतत्काष्टातटकर टिघटोत्कृत्तकृत्तिप्रतानप्रत्ययप्रच्छदाश्रयः  
कपटमृगपतिस्फारवर्म्मेत्कवेल गीर्वाणाद्दण्डचण्डप्रचयति कः कालि  
कायाः भश्यद्रूतलमुल्लसत्तनुतुलाकोटिध्वनिप्रस्फुरत्तारागुच्छमनुच्छकंङ्क  
णसशिज्योतिर्वृत्तेन्द्रायुधं । भीमभ्रमविततजटादण्डचण्डाभिघातक्षुब्धदि

कुम्भिकण्ठध्वनितविरचितोत्तालगीतप्रकाराः। पादप्रान्तप्रहारप्रचलित-  
 वसुधागोल त्पदार्घ्य व्यतिकरदलिते भूतले भङ्गदुस्य संप्राप्ते दिक्पतीनां  
 भुजवनपवनोद्वासिते सत्यशून्यं । खस्तखर्गापगार्त्रीभवति ज्वालमाला-  
 क्षिवक्त्रिभुष्ट्रच्छाण्डभाण्डद्रवविकटजटापिङ्गलिम्नःपुरारेः । न्नाम्यदाज्ज-  
 हरतु भवभयं ताण्डवाडम्बरं वः पादान्तर्लक्ष्यलेखानिभूतवसुमतीचक्र-  
 बालप्रतिष्ठं नद्याष्टाशाविभागप्रसरमुखभुजाजाललीलायितेन वपुर्वः  
 प्रलयमहमहामैरवं भैरवस्य इन्दुर्ज्ज्वरिताः कपालकुहरक्रोडे कुहू  
 कारिणःप्रोद्धूताःफणमण्डले फणपतेरायामिभिः फूत्कृतिध्वस्ता क्षेन्दवः  
 श्लेष्मताण्डवलालसालिचलितावद्वासरि चूडादृढवद्वपन्नगप-  
 तिश्वासानिलापूरशैर्गर्जन्ती तिमिरप्रसार क्षुब्धानाम्बुसच्छं  
 निनदःप्रयातिविरतिन्नाद्यापिसन्नामिव स्नातस्यानद्वष्टोःक्षरदमरधु-  
 नीवीचिभिर्मैलिलोलः कण्ठ दत्तिदम्यतिभुवनहविषाहन्तु  
 होमस्तमो नः खल्पायोमानभागःक्षयसमय जविथंडपिण्डे च-  
 ण्डीभर्तुर्वुभुक्षोःकवलकवलनापूर्वजिह्वाविलासाः कृत्वापालन पूर्व  
 क्रमक्रोडितानि पमितरथासलिप्ताविलक्षोवैलक्ष्यं वः क्षि-  
 णोतु कुमुद्यतयुधिवसुधाघातसप्रीत करजां व्यस  
 दाभूषिताः पान्तुत्वानवनीरदच्छविमुचश्रीकंठकंठांशवः दोर्दंड  
 वलये हर्षनिष्ठंदिदृक्कोभद्रचन्द्रार्धमैलेः प्रगुणयतु परब्रह्मलभः समाधिः  
 परिचयंयं विपाकेन शून्यं निश्लिष्यन्नीश्वराङ्गेऽप्युपनयतु स वः शाश्वतं  
 मोदमीशः प्राणति सर्व्वेसुराः किं चामु रजनीषु राह्वरसुरःखैरं  
 समाक्रामति पेस्यफिरदी शाकंशून्यपदेनिरस्यति यमुंच  
 तिक्षिप्यत्यम्बुधिशुक्तिसंपुटकुटीकोडे तथान्यं मुहुः देवस्यास्य मुखाम्बु-  
 जद्युतिलवप्र भुविवाङ्मया सरसिजश्रेणीभिरन्तर्जलं तत्कांठाव-  
 धिममपीनतनुभिस्तीव्रं तपस्तप्यते काष्ठाकुंजरकुंभसंनिधिमिलत्प्रौढप्र  
 तापानलं साक्षी विरोधिरान तद्धितम् । यः पीत्वा मधुपर्कमुज्ज्वलयशः  
 प्रत्यर्थिष्टश्रीभुजां निःप्रत्यूहमहोकरग्रहविधिं चक्रे नृपाणां वरः । के

चिद्वद्वाःसहेलं निजभवनगता मोचिताः केऽपि केचिद्देहाद्देहान्तराणि  
 क्षणमिव गमिताः केऽपि नीता प्रमोदं । वालापत्याश्च केचित् प्रतिपददय-  
 या प्राणवप्राश्रयोद्गाःक्षौणीनाथस्य यस्योन्नतभुजपरिधेनारयः सारयश्च ।  
 दाडोवक्त्रं निचुम्बत्सपदि विकर्षन्कुन्तलं कुन्तलीनामाधुन्वन्नङ्गनारीकुच-  
 कलशलसच्चारुचौराम्बराणि । खेलत्कान्ताश्रमजलकणिकादूषयल्लील-  
 यैव देवःक्रोडन्निवास्ते मलयमरुदिव श्रीदशार्णाधिनाथः । मेदिन्यां विष-  
 मेषुरित्यनुदिनं ष्टङ्गारवीरव्रताचार्यः श्रीपरमर्दिदेवन्तपतिः कैर्नाम न  
 स्तूयते । शय्यायां चरणाङ्गणे च पतिताः कामिन्यश्च विरोधिनश्च शतशो  
 येनामुना खंडिताः । आकाशे प्रसर प्रसर्थत दिशस्त्वं पृथ्वि पृथ्वी भव  
 प्रत्यक्षोद्यतमादिराजयशसां युष्माभिरुज्जमितं । प्रेक्षध्वं परमर्दिपार्थिव-  
 यशोरारशेर्विकाशोदयादीजोच्छासविदीर्णंदाडिममिव ब्रह्माण्डमारोह-  
 ति । चिन्तामणिर्यदि शिला न किलाभविष्यन्मन्ये नचेत्पशुरसावपि  
 कामधेनुः । वक्षो दलिष्यदुभयोरपि लज्जयास्मिन्वाञ्छाधिकं वितरति  
 द्रविणं नरेशे । निसर्गभक्त्या विदधे परमर्दिनरेश्वरः सो ऽयमेतां निर-  
 स्तारिः पुरारि चरणस्तुतिम् । दाक्षिण्यतो मम गुणग्रहणं न कार्यमा-  
 र्थाः कदाचिदपि दोषपदेभवद्भिः । द्वात्वं तदेव पुनरत्र विचिन्ततन्तु  
 येनैव संभवति चेतसि वःप्रतीतिः । वीरश्रीपरमर्दिपार्थिवपतेरस्य  
 प्रसादैकभूःपौत्रः सद्गुणशिल्पिनोऽनृणसुतःपद्माभि धानःसुधोः देउकेन  
 सहानुजेन तिलकः शिल्पक्रियाशालिनामालिख्य स्वयमुल्लिख गिरि-  
 जाभर्तुःप्रशस्तिं कृतो । अचरमचरमाद्रिव्याजवक्षोजलक्ष्मीमिलदुडुम-  
 यद्वारं धारयंत्यम्बरान्तम् । फणपतिफणशय्याशायिनी यावदुर्व्वोक्षति-  
 रिह परमर्दिक्ष्मापतेस्तावदस्तु । संवत् १२६८ कर्त्तिक शुदि १० सोमे  
 मङ्गलंमहाश्रीः ।

The first twenty-four lines of this inscription are of no historical im-  
 portance, consisting of a eulogistic address to Siva and Pārvaṭi, con-  
 ceived in terms somewhat too glowing for the pages of the Journal,  
 and are omitted accordingly.



25. "He the greatest of Kings, having drunk, like draughts of honey and curds, the shining fame of the kings his enemies, introduced a rule for collecting the land revenue without resistance from any foe (or he became the husband of the earth, which without resistance completed the ceremony of marriage)."

26. "Some having been easily made prisoners and kept in his own house, were afterwards released. In a moment he caused some of them to wander from house to house; some he made to enjoy happiness; some, the fathers of little children, with unceasing compassion for them, were seeking safety for their life within the walls (of some castle). Of the long arm of this king his enemies were afraid as of their *fatal* enemy."

27. "The King of Dasharna like the wind of the Malaya mountain, kisses sportively the lips of the maidens red like the pomegranate, seizes them by their beautiful tresses, removes the garments that shine brightly on the high bosoms of the maidens, and easily dries the perspiration occasioned by sport from the brows of the fair."

28. "By whom was not the king Paramardí Déva esteemed? He was as the god with the uneven arrows\* upon earth, like a spiritual guide in the mysteries of love. Hundreds of maidens who approached his bed, and hundreds of foes who fell at his feet, were rejected by him.

Thou firmament move on, and ye quarters of the world, proceed; and thou earth enlarge! ye who have witnessed the wide spread fame of former Kings, now behold the rising glory of the fame of King Paramardí, which like a pomegranate bursting by the swelling of its seeds, extends over the world. Seeing the gifts of this King, who gives even more than is requested, the hearts of the Divine jewel (Vishnu's Chintamoní,) and the heavenly cow (Kama-dhenu, who grants all wishes) would have burst with shame if the former were not a stone, and the latter an animal.

The King Paramardí having conquered his enemies, himself composed with his innate faith this eulogy of Purárí (Siva).

Oh ye venerable ones! although my liberality is great, still my high qualities will not be remembered by vicious persons; meditate therefore on such works as may satisfy your minds.

\* Káma, the number of his arrows being five. Another meaning of this passage is. He was unparalled by his arrows. Both meanings, this and the other in text, must be kept in view for the understanding of the passage.

“The able Padma, the favorite of the valiant King Paramardí, the grandson of an eminent artist, the son of Anrina, and superior to all artists, has in company with Déoka, his younger brother, composed and inscribed this praise of the husband of Girijá :”—

“As long as the earth, clad in the garment of the atmosphere, which is adorned with the garland of stars joining, like two resplendent breasts, the eastern and western mountains ; as long as the earth rests upon the bed of the hood of the serpent-king, so long let this work of the king Paramardí endure. Dated Monday the 10th of Kartika, Sudi Samvat 1298. May prosperity and success attend !”

No. 2.

- १ ॐ नमः शिवाय । अनुसरति सरोषे पारिजाताय तस्मिन् सपदि  
किल यथार्था रोदसी संवभूव ।
- २ कोऽपरः श्रीपरः १ भूपेऽस्मिन्वद विघ्नराजविजितं किं तस्मिन्  
नो पराम् द्येभूयतवन्धुमा निववि ।
- ३ भुजान्तरेऽपि यश्चिक्रीड किंतन्नृणाम् ४ अव्याप्ताहितदृष्टिष्टविल-  
सत्संसारदक्षक्रिया यो
- ४ वियदतिप्रसिद्धमहिमाभूमीधरे भूसुरः ६ नारायणो वृत्तवतां वि-  
हाय मोदाकुलाताव
- ५ क्तिर्द्वितीयस्य सुतोयशेखः भुवं भारात्मयशोभिरासोद्वेलाधरोदक्ष  
गत
- ६ राभिरन्ययमदन्तमनोकरेणुः १२ तस्मिन्निन्दामनार्द्रस्थितिमनुवद-  
ति क्षोणिपाले
- ७ जित् अजनि विजयपालस्तत्सुतो भूमिपालः श्रिततरतरवालध्वस्त-  
राजन्यमालः
- ८ सूनुःकुम्भोद्भवाभो नमितावनीभृत् यो दक्षिणाशाभरणीकृतात्मा  
कर्णार्णवं तूर्णमपा
- ९ चकार १९ मालवाधिपकुरङ्गलोचनालोचनाम्बुनिवहनेन सिक्तया  
मण्डपोन्नतशिर

- १० स्यसूनुर्जयवर्मदेवः प्रणीतनारायणपादसेवः सश्रीकपर्वस्वधिगम्य  
पूर्णान्यज्जाद
- ११ वर्मणि निधाय भारं भुवः परिश्रान्तः अवगाहितुं प्रपदे स नृप-  
स्त्रिदशापगानीरम् २५
- १२ मुक्तजीवास्ते परस्मिल्लक्ष्यमाप्नुवन् २८ तदनु मदनवर्मा भूमिभारं  
बभार द्विपग
- १३ गाढं मुखमभिवदनं प्राप्य दृष्ट्युक्तनन्दीच्छन्दीपान्तेद्यपेदेतरजयम-  
भि न्यस्य रक्तोभवन्धः
- १४ मुनाजीयतगुर्जरेणःक्षणेन दृष्टेन पुरेव कंसः ३३ नेता दिग्जयकौ  
तुकथसि
- १५ शश्वत्खलु कीर्त्तिमालम् ३५ भ्राता कनीयान् मदनस्य राज्ञः प्रताप-  
वर्माभवदुत्प्रतापः
- १६ सङ्कुच्य क्वापि लीनं विकलमतिदृष्टं नष्टगर्वादविष्टं रुग्णं सन्ताप-  
युक्तं निर
- १७ नां श्रोतुं स यावद्विगुणास्य चक्षुः। प्रभूर्लसद्दीरगुणो नरेपोन्यस्यदा-  
प्ता तिविरिञ्चिनायु
- १८ म्पिनीनयनयोस्तापं द्विघन्मानसे जाड्यं तद्विमुखामाजिघुकमला-  
वराच्चाग
- १९ संसर्गलीलायितम् ४५ शूरोयं ननु किंकलानिधिरसौ प्रत्यक्षमु-  
द्दीक्ष्य तेजातानन्दन
- २० कलकस्तिगरल ४७ सकलपदवाहेयुगजरथदलनसमवनसरसकल
- २१ नगजं यस्य विश्वं विजेतुः समरविजयकीर्त्तिस्तम्भरूपोर्जुनोऽभून्नि-  
चि दुनिमह
- २२ दिष्ट्या सकलसुमनसां मानसं ध्यानशे यः कामं वामः स सर्वम्भण  
मय मनयद्दीरवर्मा
- २३ तापाघनेविटपकुटोसङ्कटोसन्निवृत्तं जैत्रेयात्रासु यस्मिंश्चलति नव-  
लजिह्वाम

२४ चोम्बरं नानापत्तरथान्विताकुलकलयाहारहताध्वगं कौमारं स्व-  
पुरांथ

२५ हाप्रस्तुतादेवालयोद्यानतडागवापीः स कारयामास चतत्रतत्र ५६  
सोवो

२६ माधनुर्विंदुपाश्रयोदमदितोवयः खर्णतुलावितीर्णा सहस्रशो मेरुम-

२७ यो नीलकण्ठं कमलां च कालीं न्यवीविशत्सद्मसु शोभनेषु यज्ञे  
श्रौत नयने

२८ सार्द्धं पृथुश्रीः यत्रैतानि स्फुरन्तिप्रस्तरपृथुल

२९ दुर्दाह न्मां आन्तापूर्व्यं तदनुपदमिलत्तारतम्यक्रमेण

३० सुखस्थाने यो नृपो शूलैः प्रशस्तिर्वल्लकीवीरनामसत्यमुदे

३१ प्रदा ७२ भाखतो ५ मुपाख्याति

The meaning of the first six lines is ambiguous.

7. "Was born Bijayapála. From him sprang Bhúmipála, who with his sharp sword destroyed many kings.

8. His son made low the kings, as Agastya made low the mountain (the Vindhya mountain). Having conquered the southern country, speedily defeated the immense army of Karna.\*

9. " \* \* \* \* which was watered by the flood of tears of the gazelle-eyed females of the king of Málwa. \* \* \*

10. "His son, Jaya Varma Déva, who was devoted to the worship of Nárayana (unintelligible).

11. Being wearied of Government the king made it over to \* \* Varma, and proceeded to wash away his sins to the divine river \* \*

12. They departed their lives and obtained all their desires in the next world.

13. "After him Madana Varma assumed the reins of Government \* \* \* (unintelligible).

14. He in an instant defeated the King of Gurjara, as Krishna in former times defeated Kansha. He undertook an expedition to conquer the world \* \* \* \*

\* This sloka contains a double meaning. The word *avambhrit* is susceptible of two interpretation ; the one "Raja," referring to the word son, and the other 'mountain,' in connection with *Agastya*.

15. The younger brother of king Madana was Pratápa Varma, who was most powerful.

16. He was concerned for those \* \* \* \* \* who were lame and weak ; \* \* \* \* \* who were sick, and who were distressed.

17. \* \* \* He had double mouths and double eyes (?) He the Lord, ever endowed with the eminent qualities of a hero. (The rest unintelligible and obliterated.)

18. He made the eyes of the women of \* \* warm (with passion) and confounded the hearts of his enemies.\* \* Kamalá (Lakshmi) who was against \* \* in the field of battle. \* \*

19. \* \* he looks as a hero \* \* (unintelligible.)

20. \* \* (unintelligible.) \* \*

21. \* \* (unintelligible.)

22. \* \* He who delighted the hearts of all the learned Vira Varma, disdaining pleasure, subduing all his desires.

23. \* \* (unintelligible.)

24. \* \* (unintelligible.)

25. \* \* he caused various temples, gardens, ponds and tanks to be made at places. \* \*

26. \* \* who was a patron of archers \* \* \* who like thousands of Sumeru, bestowed gold in Tula. \* \* \*

27. Who established the images of Siva, Kamalá, and Kalí in splendid houses \* \* \*

28. \* \* (unintelligible.)

29. \* \* \* they being tired followed his steps in the order of their ranks. This eulogy was \* \* \* by a person named Vallukí Vira.

No. 3.

दोलद्दोर्दण्डचण्डाहतिचलनमिलदीपनक्षत्रजालं मुक्ताहृद्वास्यकारं  
बद्धविततजटे ताण्डवे चण्डवैरो सर्वेभ्यःसोऽस्तु नित्यं भुजगपरिकरःश-  
ङ्करः सङ्कृतऽश्रीः आसीत्सूतिःश्रुतीनां नयविनयनिधिर्धाम वै यो द्युती-  
नां राजसदृशःसर्वशास्त्रार्थवेदी प्राप्तो यो योगसिद्धिं फलमभयपदं  
ब्रह्मविज्ञानवक्ता सदृत्तोऽपि प्रतापी रविरिव सुजनाम्भोजसंघप्रमोदी  
दानो दीर्घानुकम्पी यःप्रमाणं जनस्य। तस्य पुत्रो जटिलधीर्विशङ्करमहा-



गुणः दोषा करोनवा लोदीवा सच्चन्द्रमण्डितजटामुकुटाम्बरेण्याम् अपि  
 चात्रात्ति पतत्रिणःविभान्ति चित्राजपपरे सुरसुन्दरीणां गीतैस्त्रिलो-  
 चतनमस्कृतितो न भग्नः पुरीव वराभिरामा कुरुते वीरधाम्नोर्थ  
 कारैः वीरायत्रानुविद्धैर्ध्वनिभि अगणितभयं शृराणां  
 स्वभोगविमुखोऽखिलवेद्यवेदो प्राज्याज्यहोमविध यो भाति ह-  
 यभुजि पुण्यशक्रःप्रथयतिन यमःशङ्कितोऽस्य प्रभावैर्विख्यातो विश्वमध्य  
 पुण्यार्थोवार्थनाय चात्र गुणैकखण्डं शक्तोभट्टगूच विख्याति  
 सङ्ग्राम् मोजविषेतत्खचितभयभयं ते ब्राह्मणेभ्यो  
 गुरुभ्यो ययातिः सर्वशोनिश्चितं वा

Of this inscription very little is intelligible.

“May Sankara, by whose dancing the curls of his matted hair were dishevelled, and the shining stars, struck by his uplifted arms, were agitated; whose laughter surpasses the beauty of pearls; the enemy of Chanda; and whose person is adorned with snakes as a sacred thread, \* \* \* may he belong to us every day!

“There was a Rāja the source of the Védas, the place of morality, modesty, the dwelling of renown \* \* \* well versed in all the Shas-  
 tras; who became a perfect yogi and hence attained the undisturbed fruit of Brahma, and who was the speaker of divine knowledge, and who though powerful was yet gentle, and like the sun the lotus, de-  
 lighted good persons; who was a donor and extremely kind, and an ex-  
 ample to the human race.”

“His son was Jatiladhi, whose principle was to gain the affection of others: though he was Doshákara, (the mine of guilt,) yet he was not unclean (or though he was Doshakara, the maker of light, i. e. the moon, yet he was without spot.)

(The rest unintelligible with exception of unconnected sentences.)

#### No. 4.

स्वस्तिपरमभट्टारकमहाराजाधिराजपरमेश्वरपरमहेश्वरश्रीका  
 लञ्जराधिपतिश्रीमन्मदनवर्म्मदेवपादाम्बुजाराधनतत्परो धोमान् धर्म्म  
 परायणो महाराजपुत्रश्रीसोलुणसुतमहा साहसिकेन दुःशैलेन कुमर

कुलकमलेन्दुमहाराजपुत्रश्रीवच्छराजः देवश्री नित्यविद्यैकसच्चेष्ट-  
सदुत्तमोऽग्रदानः देवश्रीनोलकण्ठस्य मूर्त्तिकरः श्रीरामसुतरूपकारः  
श्रीसाहाय्यावबद्धानुरूपकरश्रीलः श्रीवरदायामूर्त्तिरेषाकारायितेति  
संवत् ११८८ कार्तिक सुदि ६ शनौ

The welfare to Raja Deva, son of the great king by name Kama-  
lenda, born in the Kumara family, was excellent in divine knowledge,  
a liberal donor, the worshipper of the lotus foot of Madana Varma  
Deva, the learned, the king of kings, most wealthy and a great devotee  
of Mahéswara (Siva), and king of Kálinjara; in concert with the very  
valiant son of Soluna, the son of the great king, caused this image of  
Varadá to be made of stone by the same sculptor, the son of Sri Ráma,  
who made the image of Nilkantha, and who by his innate talent was  
able to form an exact likeness. Samvat 1188, Saturday the 6th Kartik,  
Sudí.

## No. 5.

दीक्षितश्रीष्ट्रीधरसुतः सर्कारश्रीकल्हणोपाभृततस्य तनयेन स-  
र्कारश्रीनृसिंहेन देवश्रीनृसिंहस्य मूर्त्तिरियं कारयितेति संवत् ११९२  
ज्येष्ठ वदि ९ रवौ

This image of Nrisingha Deva was caused to be made by Sarkkára\*  
Nrisingha, son of Sarkkára Kulhana Prabhríta,† the son of Dikshita,‡  
Príthwidethara.—Samvat 1192 Sunday the 9th Jaist Vadi.

This image of Nrisingha was made by Nrisingha, son of Kalhana, the  
son of Dikshita Príthwidhara.

## No. 7.

महेशकज्जंप्रनामुदिनप्रति नारायणकदमनकउभयकनित्प्रति संवत्  
१५९७ समय आषाढ सुदी दुइजकज्जं लिखते

\* Perhaps a title, such as Sircar, &c.

† Name of a line.

‡ The word Dikshita means one who received the initiatory incantation.

\*Daily I salute Mohesha, and both Narayanaka and Domanaka.—  
Samvat 1597, time Asharha Sudí, written by Duiyja.

No. 10.

मलिकार्जुनकज्जप्रनामु अभरननागकनाथवावुवककरमकनित्प्रति  
संवत् १६००

Salutation to Malika Arjuna† \* \* \* \* \*.—Samvat 1600.

No. 11.

पंडबफेरिथपेसरकारनबाव अबदुलहखां संवत् १६६७ चैतसुदी  
पांचै मंगलु लिखितं रामदास तरफदार गोसांईदाससुत पंडबनकहे  
प्रनामु

‡ This was written in the Samvat year 1667, on Tuesday the fifth  
Sudí of Chait, during the reign of Nawab Abdool Khan, by Ramdas  
Tarafdar, son of Gosain Doss. Salutation to Pandanona.

No. 12.

पीताम्बरे गणपतावपिनिष्करांशे काजझरेवसतुमध्यगुहेतुगुप्ते व्याघ्रे-  
श्वरे प्रथितनाम्नि च पुण्डरीके धर्मेश्वरेस्वभिधभोगिसहस्रालङ्गे योना-  
स्तिके दलितसायनभावितेद्धाधातैष शैलमयशैवगृहाणि मुक्त्यै विध्वंसि  
तानि सदनानिपुनर्नवानि सोयं वसन्तहरनन्दनताण्डवाय

There are in the solitary valley of Kalinjara, which is free from rents,  
the images of Pitámvara (Vishnu); Ganapatí, Pandareka (Vishnu),  
which is well known by the name of Byaghreswara§ and of Sahasra-  
linga (Indra). He who subdued the Atheists had for his salvation  
erected these temples of Siva, which were made of stones. Besides  
this for the dancing of the son of Vasantahara, he also repaired all the  
destroyed temples as newly erected.

\* These Inscriptions are not in Sanscrit language, but in rough Hindi, or in some  
language of the hilly tribe mixed with Hindi.

† The rest is not intelligible.

‡ पंडबफेरिथपे । The meaning of these foregoing letters is I presume nothing else  
than the name of a place, *Pandavoferithopa*.

§ Here the words स्वभिध भोगि have no perspicuous meaning.

## MISCELLANEOUS.

*What to observe on the Himalayas.*

The following instructions what to observe on the Himalaya were given by Baron Von Humboldt to Dr. Hooker, and have been kindly communicated to us by the latter gentleman.

Hauteurs auxquelles cessent de certaines familles de plantes.

Le caractère de la Flore Sibérienne : est il, vers Cashemir et Ladak, si général qu'on le prétend ?

Jusqu' à quelle hauteur y-a-t-il des poissons dans les lacs ? Comparer les espèces et les rapporters.

Etre bien attentif à la température du sol à différentes hauteurs.

Se servir de sondes à cet effet, comparer les températures du sol entre les tropiques de 18 pouces à 2 piéds de profondeur (Boussingault) avec la profondeur de 20 ou 30 piéds plus au Nord.

Eclaircir le problème de la hauteur des neiges perpétuelles à la pente méridionale et à la pente septentrionale de l'Himalayah, en vous rappelant les données que j'ai réunies dans le troisième vol. de mon *Asie Centrale*.

Je ne puis croire à l'uniformité et à l'ennui des Gneiss, Micaschistes, ou formations Siluriennes de l'Himalayah.

Faire plus d'attention aux formations Porphyriques, au Grünstein, aux Amygdaloïdes (?) aux Basaltes (?) de la chaîne.

Si l'on est assez heureux de traverser la grande Cordillère de Kouen-luu pour arriver à Yarkand, en remontant vers les sources du Chajouh, affluent de l'Indus, être bien attentif au *peu* de hauteur de la plaine qui envoie les eaux à l'est, par le Tarem au Lac Lop.

Des hauteurs barométriques, ou, s'il le faut absolument, des degrés d'eau bouillante, seroient bien précieuses à déterminer dans la plaine à l'est de Yarkand.

Variations horaires du Baromètre dans les plateaux et dans l'Himalayah même.

Observations psychométriques, pour en comparer les résultats avec l'énorme sécheresse que j'ai éprouvée dans les steppes de Sibirie.

Températures des sources, des cavernes.

Les Insectes vont-ils moins haut que les plantes ?

PROCEEDINGS  
OF THE  
ASIATIC SOCIETY OF BENGAL,  
FOR APRIL, 1848.

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The usual monthly meeting was held on the evening of Wednesday, the 5th of April.

J. W. COLVILLE, Esq. President, in the chair.

Dr. Falconer, with reference to the publication of the March number of the Society's Journal, on the day of the April meeting, and the consequent appearance of the Proceedings for March prior to the confirmation of the minutes by the April meeting, adverted to this as an irregularity, and complained of the Report being incorrect in its account of the part he took in the discussion at the March meeting. Dr. Falconer also renewed his objection to the irregularity which he considered had taken place in the last election of an Honorary member.

The President replied, that the publication of the Proceedings was authorized by the rule adopted by the Annual Meeting of February from the last Annual Report. As to any error in the Report he was certain it would be at once corrected when pointed out.

The accounts and vouchers for March were submitted.

The following gentlemen having been regularly proposed and seconded at the March meeting, were ballotted for and duly elected :—

*C. Gubbins, Esq. C. S.*

*Lieut. R. McLagan, Bengal Engineers.*

*Raja Ramchand Singh.*

*Babu Ramaprasad Roy.*

Read notes from—

Lieut. Baird Smith, B. E. and R. Thwaytes, Esq. withdrawing from the Society.



The following gentlemen were named for ballot at the May meeting :—

Dr. Adam Bell, Surgeon to the Governor General, proposed by the Lord Bishop, and seconded by Dr. O'Shaughnessy.

James Corcoran, Esq. Urdu Translator to the Sudder Dewany Adawlut—proposed by Dr. O'Shaughnessy, seconded by Mr. H. M. Elliot.

Andrew Hay, Esq.—proposed by Capt. Douglas, seconded by Mr. Laidlay.

Lieut. H. C. James, 32d N. I.—proposed by Mr. Laidlay, seconded by Capt. Thuillier.

Capt. Champneys, Deputy Auditor General, proposed by Mr. Blyth, seconded by H. Alexander, Esq.

Col. Hearsay, 10th Bengal Cavalry—proposed by Mr. Blyth, seconded by Mr. Frith.

Read letters from H. M. Elliot, Esq. Secretary to the Government of India, Foreign Department, requesting the immediate return of Lieut. Stack's Grammar of the Sindhi language, as that officer is desirous of superintending its publication at Bombay.

From H. M. Elliot, Esq. transmitting for publication by direction of the Governor General in Council, a second Report from Lieut. Keatinge, on the navigation of the Nerbudda between Hindia and the Falls of Dharee. (Ordered for publication.)

From J. Thornton, Esq. Secy. to Government N. W. Provinces, forwarding a duplicate of the same paper, and requesting to be supplied with 100 printed copies for distribution.

From H. M. Elliot, Esq. transmitting for publication by desire of the Governor General in Council, a Report (in original) on the Kohistan of the Jhullunder Doab, by Lieut. Parish, of the Artillery. (Ordered for publication.)

From H. M. Elliot, Esq. transmitting a letter from Mr. John Lawrence, with enclosure and drawings by Lieut. Herbert, 18th N. I., of Ariano-Pali fragments found by Major Lawrence in the Yusafsyee country. (Ordered for publication.)

From Capt. H. L. Thuillier, Officiating Deputy Surveyor General, communicating a Tabular monthly statement of the fall of rain; and of remarkable gales—hurricanes and thunder-storms, experienced in Calcutta for the 19 years, ending December, 1847.

From Capt. James Abbott, Boundary Commissioner, Punjab, dated Camp near Jumboo, 6th March, 1848, sending an account of the process employed at Koteli for the manufacture of the Damask Matchlock Barrels. (Ordered for publication.)

From Dr. Campbell, Darjeeling, forwarding his Itinerary of the route from Phari in Thibet, to Lassa, with notes by Mr. Hodgson. (Ordered for publication.)

From Major Madden, Bengal Artillery, Almorah, forwarding his account of the Turac and outer mountains of Kumaoon. (Ordered for publication.)

From B. H. Hodgson, Esq. Darjeeling, returning by dak banghy, Humboldt's *Asie Centrale* and Pemberton's Report of Bootan, lent Mr. H. by the Society.

From Lord Arthur Hay, presenting to the Society the last edition of Wilson's *American Ornithology*, and 188 original drawings of Indian birds and insects, prepared under his Lordship's superintendence.

The special thanks of the Society were unanimously voted to Lord Arthur Hay, and personally expressed to his Lordship by the President.

From John C. Erskine, Esq. Judge of the Cis-Sutledge states, enquiring regarding a History in Sanscrit by the Pundit Jowahir Lal, with a map of the place of Pilgrimage called "Kuruk-Kshetra."

The Secretary stated that the Map has been found, and that the MS. is supposed to be in the possession of the Rev. Dr. Hæberlin of Dacca, who has been referred to on the subject.

From Babu Ramgopal Ghose, with reference to the alleged discovery of certain Sanscrit works mentioned by Capt. Cunningham in his official correspondence, but which Babu Ramgopal finds are all procurable in Calcutta. (Referred to Oriental Section.)

On the "Oology of India," a description of the eggs and nests of several birds of the plains of India, collected chiefly during 1845-46, by Capt. R. Tickell. (Ordered for publication.)

From Capt. Kittoe, forwarding a proof copy of three inscriptions he has had printed in Modern Nagree, and translated in the Vernacular, for circulation in the Benares district; also transcript of Col. Ouseley's inscription from Pujjur, and a coloured impression of the famous medal in the possession of Ram Row Thakea at Benares.

The medal is of the purest gold, weighing 100 sicca weight, copied from one of Alumgheer.

Views of the Benares College, now erecting by Capt. Kittoe, were also exhibited to the meeting.

On the Liquidamber tree of Tenasserim, by the Rev. F. Mason, late of Moulmain. (Ordered for publication.)

From Dr. Roer, conveying the Report of the Oriental Section on several references made to it by the last meeting.

*To the Senior Secretary, Asiatic Society of Bengal.*

SIR,—In answer to your letter of the 29th ult., I have the honour to convey to you, for the information of the Council, the opinion of the Section respecting the subjects submitted to their consideration.

2. The Section beg to suggest, that of the Tazkiras of the Persian, Hindi and Urdú poets, as many should be purchased as the funds of the Society will admit, and that Mr. Hall be requested to make the selection.

3. As to the rite of Antarjala, I have annexed some passages of the Purānas, bearing on the subject, which clearly prove, that the rite is well established, but limited to places near the banks of the Ganges. It is also mentioned and sanctioned in the Navya Smriti. This rite is, however, of comparatively modern date, as no allusion is made to it either in the Vedas, or in the Itihasas, or in Manu.

4. With regard to the work of the Prince Gholaum, the section have not come to a conclusion, and I would therefore suggest, that the subject be decided at the next meeting.

5. The Section are of opinion, that Major Troyer has the first right to print the unpublished portion of the Raja Tarangini; at the same time they would recommend, that a careful copy of the MS. be taken, before it is transmitted to Major Troyer.

E. ROER,

With reference to the above Report, it was agreed that the extract relating to the rite of Anterjali, be communicated to the Rev. Mr. Keane.

Proposed by Mr. Elliot, seconded by Mr. Seton Karr, and agreed unanimously, that 300 Co.'s Rs. be expended from the Oriental Fund on the purchase of such Tazkiras as Mr. Hall might select for the Library of the Society.

Read a letter from the Secretary of the Oriental Section, sending translation of a letter from Dr. Maximilian Muller, with a specimen of his forthcoming edition of the Rig Veda Sanhita.

*East India House, 18th Dec. 1847.*

MY DEAR SIR,—From the last numbers of the Journal of the Asiatic Society of Bengal, I observed the active zeal with which the Asiatic Society intend again to show their interest in the ancient literature of India. An edition of the Vedas in India under the direction of a European philologist, who can avail himself of the assistance of bráhmans acquainted with the Vedas, and of the rich collections of MSS., has been a wish long time cherished by many scholars, especially in Germany, since the decease of Rosen. The interest and enthusiasm for Indian antiquities appeared unfortunately to have ceased of late in India; since Wilson's departure, and Prinsep's death there have been no scholars to represent and promote such undertakings. Your numerous articles in the Asiatic Journal were after a long time the first which gained for the ancient Sanskrit again an honourable place, beside the laws of storms, &c., and the learned world observe with pleasure, that by your connection with the Asiatic Society you have laboured to revive a general interest in Sanskrit literature.

Could I have a short time ago anticipated, that an edition of the Vedas with commentary should be published in India, I would not have thought of entering here upon such an undertaking, but I heard unfortunately of the intention of the Asiatic Society, when I had already for three years been occupied with collecting materials for an edition of the Rig Veda and its commentary, and when I had made engagements which did not permit me to give up my plan. But even if you should not publish the Rig Veda, as I perceive from the August number of your Journal, I rest satisfied, that you will use the rich materials at your disposal in India in the interest of other Vedaic works, especially of such as like the Taittiriya Sanhita and Bráhmaṇa are entirely inaccessible in Europe.

You know yourself how difficult it is to publish in Germany a new work in Sanskrit. We have no MSS., especially no commentaries, which we have to refer to in the room of Indian Pundits, and a long stay in Paris or London to collect in the Libraries manuscript materials, is difficult and expensive. I had for a long time entertained the desire to know more about the Vedas than it is possible from Rosen's work, and when I had three years ago an opportunity to proceed to Paris, it was my principal endeavour to study the Veda MSS. and to copy as much as I could for an edition of them. I indeed succeeded to maintain myself so long in Paris, that I copied and compared the greater portion of Mádhava's commentary. The Bibliothèque Royale possesses a pretty complete copy of this commentary, beside several MSS. of some portions, especially of the first book. But, however correct the MSS. of the text of the Vedas generally are, those of the commentaries are very much corrupted. At the commencement of my labours I nearly despaired

to give a correct reversion of them, since they are not only full of mistakes in difficult passages, as in the quotations from the Bráhmaṇas, from Aswaláyana and Pāṇini, but since even the simplest groups of letters are generally incorrect. Yet I did not give up my task, and after having studied several works introductory to the Vedas and having copied the Nighanta and Nirukta, the Sūtras of Aswaláyana with commentary, and also the Aitariya Aranyaka and Bráhmaṇa, and Mádharma's commentary of the Yajur Veda, I became familiar with the style of the commentaries and the mode of expression in the Vedaic writings, and when E. Burnouf placed also his pretty correct MS. of Mádharma's commentary at my disposal, I seriously thought of editing this work, and went to England for the purpose to complete and compare my manuscript materials. Although I did then no longer despair to restore a correct text of the Vedas and its commentary, I met with the new difficulty, how to publish so extensive a work. I entered into proceedings with the Academy in Petersburg, but I was obliged to give up my plan from circumstances which I could not control. A German bookseller offered then to print the work, but only under the condition, that a sufficient number of subscribers could be obtained. When I at last applied to the East India Company for a subscription, I was informed, that the Directors declined a subscription, but that they were ready to print the work at their own expense in England. Although I cannot deny, that I would have preferred to publish the work in Germany, and although from my staying in England, my German career must necessarily be somewhat retarded, yet I had to consider the many advantages I could derive from the use of the MSS. in London. Above all the success of the undertaking was by the liberality of the Directors so completely secured, that I at last resolved to remain in London. I then commenced immediately to print, and although I at first slowly proceeded in consequence of some typographical arrangements, I have now the satisfaction of getting every week one sheet through the press.

There is no want of MSS. here. Beside those I collected in Paris, I have Colebrooke's copy for the commentary, another, although incomplete, copy of Taylor, another more modern from the collection of Prof. Wilson in Oxford, and lastly a copy Dr. Mill kindly lent me from his private collection. But as I observed before, these MSS. are incorrect; moreover, nearly all of them are derived from the same source, and as they almost invariably present the same errors, they have hardly any value as MSS. A good old MS., if possible from the southern part of India, would be of great use to me, especially for the last books, since I have more MSS. for the first Ashtakas than for the others. There are not many various readings of importance with the exception of additions and improvements which occur in more modern MSS., especially in that of Burnouf, which is copied by the



Marathas, and may therefore contain marginal notes, made by scholars of that country. Where I thought them useful, I have retained them, and it would be interesting to examine, whether Mádhaba's commentary has been subjected to a still farther emendation, especially in the Dekhan. Should you be able to purchase or borrow some other MSS. from India, you would confer a great obligation upon me; but the copies ought not to be of modern date, which, as I said before, we have here in abundance. I believe I can render the text correct by the means of the MSS. at my disposal, especially by the MSS. of Dr. Mill.

I take the liberty to send you the first 120 pages of my edition, and request your candid opinion concerning them, as by your labours on the same ground you are best able to judge. The introduction especially presents a number of difficulties, and I was obliged to devote a long time to the study of the Purva Mimansa, to understand and verify the quotations from Jaimini and Mádhaba's Nyaya-mala-vistara, and to follow, by the assistance of other works, for instance of Sabará's commentary, the complicated, but logically precise argumentation. I have added the passages from Pánini, for the purpose of facilitating its study, as it is often difficult to find the Sútras, if they are not complete, and especially the Vartikas, which Boethlinck has unfortunately often omitted in his otherwise useful and diligent edition of Pánini. I also quote Unádi and Philsútra, Nirukta, Prátisákhyā and Aswālayana, which (quotations) will of course more and more cease in the latter books. I have not entered upon the quotations from the Bráhmaṇas, as I was not able to verify all of them; moreover the division in these works is so uncertain, that it appeared more expedient to wait for an edition of the text. I intend, however, to verify and explain in my notes the most important quotations from these works also. I did not think proper to omit passages of the commentary, first, as it is a work of reference, where it is irksome to be referred from one place to another; and secondly, as in the repeated explanations important additions and differences are frequently met with. I am, however, willing to improve, where improvements can be made, and I should therefore feel greatly obliged, if you would transmit these printed sheets to some of the most learned pundits in Calcutta or Benares for their opinion. It is of course my wish to render this edition useful also for India, and it would be very interesting to me to hear the opinion of Indian scholars, especially as most of them appear to believe, that no European could satisfactorily execute a work of this kind. I would especially be gratified to hear the opinion of learned men above the prejudices of their country, as Raja Radha Kant Deb, for instance, who by his dictionary has acquired the lasting gratitude of all Sanskrit scholars, and who best knows, that the ancient literature of India need not to be screened from the light of publicity, but

may boldly challenge the comparison of the literatures of all nations the history of which shows the same progress of intellectual development. There is no necessity that I should here dwell on the high value of the Vedas, since you no doubt have the same opinion with me, that they, among works of a similar kind, are the most interesting and important productions of the human mind, and give us the most valuable disclosures on the history, language and intellectual development of a people highly gifted by providence with the happiest faculties. It is true, to find the proper value and true sense of these hymns, we must frequently deviate from the scholastic explanations of Mádhyava, however great the regard may be we are to place on his commentary, founded as it is on ancient tradition. I intend to publish my view of the Vedas in a German translation, after the Sanskrit text has been completed; Prof. Wilson has, however, promised an English translation, which will probably be attached to every volume of the text.

I would not have ventured to address you so long about my own affairs, did I not suppose that you take yourself a lively interest in the success of an undertaking for which you have worked with so zealous an activity. It would give me great pleasure to hear which part of Vedaic literature you have chosen first to treat on, and with regard to this I would draw your attention to the fact, that the Vajasaneya Sanhitá will probably soon be published by Dr. A. Weber in Germany, and also that Bardelli prepares an edition of the Atharva Veda. Yet there still remains for you a rich field in India, especially respecting the Bráhmaṇas, in which the European collections are comparatively poor. As soon as the first volume of my edition is completed, I will forward the subsequent sheets to the Asiatic Society.

Jan. the 10th.

I am sorry that the transmission of my letter has met with some delay. I placed it inside of the copy, in the hope, that you would thus most certainly receive it. The sheets have, however, been sent off separately by the Directors. The printing has now made further progress, and I trust to be able to publish in the course of this year a large volume. In conclusion I take the liberty to ask you, whether there is an opportunity in Calcutta to purchase or copy a large number of MSS. The Prussian Government, which has bought on a former occasion, the collection of Sir Ch. Chambers, is desirous to vote an annual sum to complete their collection, which is especially indispensable with regard to the commentaries to render these MSS. useful. You would also do great service to all German Sanskrit scholars, if you could inform me about the mode of doing this, principally about the terms of copying, unless this gives you too much trouble. The money of course would be deposited with an Indian banker, and the Prussian ambassador in London, Chevalier Bunsen, takes an active interest in this undertaking.

P. S. Would it give you much trouble to ascertain in Calcutta, whether a copy of the octavo edition of Manu with commentary may be there obtained. In Europe it is not procurable. Could you also inform me, how I may obtain a copy of the Sabda-Kalpa-Druma, or if it is not for sale, would you in my name request Raja Radhakant Deb to favour me with a copy.

With reference to the desire of the Prussian Government to have copies made in Calcutta at their expense, of several Sanscrit MSS. and works required to complete their collection, the Council recommend that the Society afford all facilities for the accomplishment of the wishes of the Prussian Government. (Agreed unanimously.)

From Dr. Roer, forwarding letters from Prof. Lassen and Mr. Koenig.

*Extract of note from Dr. Roer.*

I send you a letter from Professor Lassen to my address, in which he requests me to thank the Society for the copy of Abdul Razzaq's Dictionary with which they presented him, and also to inform the Society, that he has despatched the second part of the first volume of his "Indian Antiquities." He further mentions, that Dr. Benfey, in Goettingen, is publishing the Sāma Veda, and that Dr. Weber, on the part of the Berlin Academy, has gone to Eugland to collect materials for an edition of the Vasaueya Samhitā. Mr. Koenig has requested Professor Lassen to express his wish to receive regularly every month 25 copies of our Journal, and has no doubt that this number would be disposed of, as there are so many Universities in Germany, all of which would like to get the Asiatic Journal, if regularly transmitted.

Here are also two letters from Mr. Koenig, the one lately received, in which he states, that he has forwarded on the 20th December last a package of books to the Asiatic Society, accompanying this letter.

There is, however, no list, as he mentions, but it is in his other letter of the 14th December, 1846. On receiving this the Asiatic Society resolved to send him the works he asked for in exchange of those he offered to the Society, and I was then requested to obtain the works for Mr. Koenig, but as he had at that time not despatched the books for the Asiatic Society, I thought it right to wait, until we received information that the books were actually sent off.

Will the Society now authorize me to get the books in Calcutta and to despatch them by the first opportunity that offers. The Librarian has also a list of them, and has told me that he can get them in Calcutta at any time they may be required.

27th March, 1848.

E. ROER.

*To the Secretary of the Asiatic Society of Bengal.*

SIR,—I have received the valuable consignment of Sanscrit books which the Royal Asiatic Society has done me the honour of sending to my address. I beg leave, by your kind mediation, to offer to the Society my best acknowledgment of the favour with which they have been pleased to notice my editorial efforts for propagating the Oriental studies in this country. As a slight token of my gratitude I hope the Society will kindly accept the following books, which I have lately published and which I shall dispatch to India by the first opportunity; these are 1.—*Sanscrit—Mudra Rakshasa*, cum glossario instructum, edidit N. Delius, 12 copies. *Bibliotheca Sanscrita*, ed. Gildemeister, 20 copies. *Lexicon and Index to Panini* by Golstücker 12 copies. *Karmavakya*, ed. Spiegel, 12 copies. *Mricchakati* ed. Stenzler, 12 copies. *Panchatantra*, ed. Kosegarten 12 copies. 2.—*Lassen's Indische Alterthumskunde* Vols. and 1. 2, 6 copies. *Lassen's and Westergaard's Keil Inschriften*, 3 copies. 3.—*Other Oriental books*. Rieu *Abul Ala*. Tommer's *biblische Abhandlungen*, 12 copies. Schleicher's *Sprache des Osseten*. *Lassen's Zeitschrift für die Kunde des Morgenlandes*, Vol. VII. 2 copies. 4.—*Classical Philology*. *Grafenhan's Geschichte der Philologie* 4 Vols. 2 copies of *Lersch's Sprachphilosophie der Alten*, 3 Vols. 2 copies. *Nækis*, Valerius, 3 copies. 5.—*Shraf's Topography of Jerusalem*, 2 copies.

As the Society is fully aware of the importance of the university of Bonn as a central point of Oriental studies in Germany, and of the constant applications which are made to me as the chief publisher and bookseller for this department, I hope to be excused for the apparent freedom which I take in asking the Society's liberality to send me the following books which are in their possession: viz. *Institutes of the Hindú Religion*, by Rughu Nundun, 2 copies. 21 Separate dissertations of Rughu Nundun, 2 copies. *Nirnaya-sindhu*, 2 copies. *Panc'apaksi*, 2 copies. *Rudracandi*, 2 copies. *Shamarúpayátrapaddhati*, 2 copies. *Menu Sanhita* with Kulluka Bhatta's commentary, 6 copies. 16 *Sanhitas* by Bhavanic'ara 2 copies. *Sankyaprávácanabháshya* 2 copies. *Rámaratná's Amarakosha* 2 copies. *Sabdakalpalatika*, 2 copies. *Vrittaratnavali* 2 copies. *Prakastiprakasika*, 2 copies. *Ganitadhia* 2 copies, *Goladhia* 2 copies. *Grahtagara* 2 copies. *Bhagavata purana*, *Suapuvdhaya*, *Bhagavadgita*, *Prabodhachandrodaya*, *Abhijnánasakuntalá*, *Mahanataka*, *Gitagovinda*, *Rasatarangini*, *Hitopodesa*, *Sanskritamálá*, Bhaskara's *Vijaganito*.

To the celebrated Radha Kant I shall, by the same opportunity, transmit a copy of all my publications which I have sent to the Society, for which consignment you, Sir, will be kind enough to procure one or two copies of the celebrated Sanskrit dictionary published by Radha Kant. The distinguished author will perhaps be the more inclined to comply with my wishes



as he will benefit by it in a high degree the Oriental students in Germany, as I don't design this work for sale, but shall religiously keep it for the numerous applications made to me for its use.

I am Sir, your's,

H. B. KOENIG.

*Bonn, Dec. 14th, 1846.*

*To the Secretary of the Asiatic Society of Bengal.*

SIR,—For those books sent to me by favor of the Asiatic Society of Bengal, as advised by letter of the 7th of June 1847, by Dr. T. H. E. Roer, I beg to offer my sincere thanks to the said Society. The books have as yet not arrived.

Through the kindness of Messrs. Allan and Co. London, I forward to your address this day the already announced package of books, containing 97 volumes, as per enclosed list, which I have the honour to beg the Asiatic Society to accept of.

At the same time I take the liberty to enclose in the above mentioned package a parcel of books addressed to Rajah Radhakant, which I beg you will have the kindness to forward to this gentleman, as a small token of the high regard I entertain for him, and an acknowledgment of gratitude for his valuable work which he had forwarded to me. You will find in the package an open letter addressed to Rajah Radhakant, which will inform you of the volumes destined for him.

I have the honour to be, Sir,

Your most obedient servant,

H. B. KOENIG.

*Bonn, December 20th, 1847.*

*Extract of a note from Capt. BROOME.*

"I send herewith a copy of the Raja Taranginí I have just got down from Cashmere. Its history is this: Mr. Piddington (when I was at Jummoo) forwarded to me a letter from Capt. Troyer in Paris asking him to procure a complete copy with the two last, though apocryphal, books. I inquired and found that in addition to the books of the Pundit Kuln, there were three continuations of the work by different hands, bringing it up to a comparatively recent date. I ordered the *whole* to be carefully copied, and here is the result.

I intend this for Capt. Troyer and shall send it to him, but I think it would be well to have a copy of it in the Society's Library, and also to have it examined to see if it is what it purports to be, and if there is much more or valuable information in it. If there is, the latter portion (untranslated by Troyer) might answer well for the monthly serial now started."



*Natural History Department.*

*Council of the Asiatic Society, 5th April, 1848.*

The Council submit a Report received from the Section of Natural History on the reference made to the Section respecting Mr. Blyth's claim for an increase of salary and a retiring pension. The Council propose that the Report be received and adopted by the Society.

W. B. O'SHAUGHNESSY,  
*Secretary, Asiatic Society.*

The Secretary's letter, forwarding the Report, recommended the immediate preparation of a collection of shells to be forwarded to Mr. Cumming in return for his donation, and the payment of £25 10s. for works on Conchology sent by Mr. Cumming on the part of Messrs. Sowerby and Reeve. A similar recommendation was made in favor of Mr. Van der Busch of Bremen; and with reference to an application from Mr. Mitchell for a gift of specimens of Natural History for the Museum of Montrose, regret was expressed that such a donation could not be advised. The above recommendations were unanimously adopted by the Society,

With reference to the Report on Mr. Blyth's application, the Report having been read, and the question put as to its adoption by the Society,

Mr. Newmarch objected to the Report as conceived in an illiberal spirit, and treating of matters on which the Section were not invited to offer their opinion. He proposed that it be laid on the table during the ensuing month, and be discussed at the May meeting.

This proposition having been seconded by Capt. Thuillier,—it was agreed, at the instance of Dr. Falconer, that it should be decided by ballot.

A ballot was accordingly taken, when 16 balls were found in favor of, and 11 against Mr. Newmarch's motion.

A majority of two-thirds being required to carry a vote by ballot, this result caused considerable embarrassment and led to much discussion.

Mr. Bushby said Mr. Blyth should be afforded every opportunity of replying to the serious charges against him made in the Report.

Mr. H. M. Elliott then moved, seconded by Mr. Heatley,—

That before the report of the Section of Natural History with respect to Mr. Blyth be adopted, Mr. Blyth be afforded the opportunity of submitting a

reply to the comments upon his conduct as Curator, and that the same be laid before the next meeting, through the Council, for consideration.

The general sense of the meeting being that this proposition should be decided by show of hands, it was put accordingly, and carried by a large majority.

*Council of the Asiatic Society. (Honorary members.)*

Dr. Falconer having represented to the President, and through him to the Council, that the mode of electing an Honorary member adopted at the last general meeting was irregular, inasmuch as it was decided by a show of hands and not by ballot, pursuant to the 6th of the original rules adopted from the Founder's discourse, by which it is decided that all questions shall be decided on a ballot by a majority of two-thirds, the President and Council whilst they express their thanks to Dr. Falconer for calling their attention to this inconsistency between the practice and the rules of the Society, beg to state that they have ascertained that for a period of eight years the election of Honorary members, the election of officers,\* and all other questions, have been decided by a show of hands, and not by ballot. The President and the Council are therefore of opinion that it would be inexpedient to reconsider the election of any one or more of the Honorary members who have been elected, or to open any question which has been decided by a show of hands, or by written votes. They are also of opinion that to decide every question however trivial which may require the formal decision of the Society by a ballot, would be extremely inconvenient, and they are therefore not inclined to recommend the observance of rule 6th in its literal strictness. To meet however the wishes of Dr. Falconer, and such other members as may agree with him in thinking that the elections of Honorary members should be more solemnly conducted than they have lately been, the President and Council do recommend that in all future cases Honorary members be elected by ballot, and that no such election take place unless a detailed statement of the literary or scientific services of the proposed Honorary member be submitted to the Society at the general meeting next previous to that fixed for the ballot.

By resolution of the Council,

W. B. O'SHAUGHNESSY,

*Secretary.*

*Asiatic Society, 31st March, 1848.*

Dr. Falconer, with reference to the above communication, stated that it overlooked the principal ground upon which his objection rested and

\* Except the last annual election, which was by written votes.

noticed only the minor ones. The circumstance of there having been no ballot, although irregular, was but an adjunct : his main objection was, that the election took place, on a mere verbal intimation by the Secretary. There was no ballot certificate, nor report brought up from the Council, nor a certain voucher of any kind, laid before the meeting ; nothing in short upon which a valid election could take place. He quoted from the "Gleanings," vol. 1. p. 59, a resolution passed by the Society, on the 5th December 1828, prescribing the procedure for the election of Honorary members, none of the provisions of which had been observed on the late occasion. Under all the circumstances he considered that the election should be gone through *de novo* ; he did so solely out of respect to the rules and statutes of the Society, and would himself cordially support Dr. Henry's election.

The Secretary replied he had done exactly as had been done for ten years in all similar cases. He produced the written resolution signed by the President, three Vice Presidents and nine members of the Council in favor of the election, which he last month stated had been accidentally mislaid, and expressed his extreme regret that the slightest informality should have occurred.

A re-election being generally objected to on the grounds that every election of the last ten years should be similarly remanded to a new ballot, Dr. Falconer handed in and read a written "Protest" signed by himself and Dr. Walker, against the proceeding in question.

The question being put whether this Protest should be printed, Mr. H. M. Elliot proposed, seconded by Mr. Welby Jackson, that the Protest be not printed. Mr. Elliot having claimed a ballot, his proposition was carried by a majority of 18 to 5 balls.

*Council of the Asiatic Society.—Repairs of House.*

The Council Report that eleven beams in various parts of the house having been found to be totally destroyed by white ants, and a professional survey having shown the premises to be in need of immediate and thorough repair, the Council have, as authorized by the last annual meeting, accepted the estimate rendered by Mr. Vos, and directed the repairs, &c. to be commenced forthwith.

This will render it necessary to close the premises with the exception of the Library for between two and three months, and the Council advise an adjournment of the monthly meetings during that period, all

papers and correspondence being meanwhile referred to the Council, and the Journal issued regularly as at present.

The Council observe that for the early years of the Society, the meetings were always adjourned from April to October, in each year.

By resolution of the Council,

W. B. O'SHAUGHNESSY,  
*Secretary.*

*Asiatic Society, 5th April, 1848.*

This proposal was unanimously adopted except as far as relates to the suspension of the meetings, which it was resolved should be held at the usual monthly intervals at such place as the Council might select.

The Secretary then stated that he was authorized to inform the meeting that the Nawab Nazim of Bengal, Honorary member of the Asiatic Society, had signified his intention of presenting the Society with a massive pair of iron gates and complete iron railing for the enclosure of their premises.

The cordial thanks of the Society were voted unanimously, for this munificent donation, to be conveyed through Mr. Torreus, to whose instrumentality it was understood, the Society is mainly indebted for the Nawab's gift.

The Librarian submitted his monthly report, as follows :—

*List of Books.*

LIBRARY.

The following books have been received since the last meeting.

*Presented.*

Description of the Asafoetida Plant of Central Asia.—BY H. FALCONER, Esq.

Account of Gamoplexis, an undescribed Genus of Orchideous plants.—BY H. FALCONER, Esq.

The Oriental Christian Spectator, Vol. IX. No. 2.—BY THE EDITOR.

Journal of the Indian Archipelago, Vols. I. and II. No. 1.—BY THE GOVERNMENT OF INDIA.

General Observations on the Provinces annexed to the Russian Empire.

under the denomination of the territory of Armenia. Translated from the French by S. Marcar.—BY THE AUTHOR.

Bibliographia Armeniaca, or a miscellaneous work in the Armenian language. By S. Marcar.—BY THE AUTHOR.

Meteorological Register kept at the Surveyor General's Office, Calcutta, February, 1848.—BY THE OFFICIATING DEPUTY SURVEYOR GENERAL.

Nityadharmánuranjiká, Nos. 49 to 55.—BY THE EDITOR.

Oriental Baptist, Vol. II. No. 16.—BY THE EDITOR.

The Upadeshak, No. 15.—BY THE EDITOR.

The Calcutta Christian Observer, April, 1848.—BY THE EDITORS.

Journal of the Indian Archipelago, Vol. II. No. 1.—BY THE EDITOR.

Wilson's American Birds, and 188 original drawings.—BY LORD ARTHUR HAY.

*Exchanged.*

London, Edinburgh and Dublin Philosophical Magazine and Journal of Science, No. 212.

Calcutta Journal of Natural History, No. 30.

Edinburgh Philosophical Journal, No. 87.

*Purchased.*

North British Review, No. 15.

Edinburgh Review, No. 175.

The Annals and Magazine of Natural History, No. 1, of 1848.

Comptes Rendus Hebdomadaires des Seances de l'Academie des Sciences, January to December, 1846, and Nos. 22 to 25 for 1847.

Journal des Savans, November, 1847.

Gould's Birds of Australia, Nos. 28 and 29.

*Report of the Curator Museum of Economic Geology for the month of February and March.*

We have not had many contributions of importance during these months, and I have been occupied with many details and some researches which are not yet forward enough to report upon if successful.

*Economic Geology.*—Dr. Spilsbury forwarded to us sometime ago a specimen of a "Swamy Stone" used for polishing steel arms and accoutrements by the Madras Sepoys, which as a mineral differs entirely from what we before obtained and somewhat in its manner of use. The friend who sent it to Dr. Spilsbury says :—

"I regret being unable to furnish you with such information as you require regarding the so called "Swamy Stone" used by the Madras Sepoys for polishing arms and accoutrements, nor can I gain for you any as to its locality. The mode of using it is very simple ; a few drops of oil being put in the con-



cave stone rub with the other until a paste is formed, which with friction by the hand on either steel or brass will produce a beautiful polish."

It will be recollected that I ascertained the Swamy stone sent from Europe by Major William's brother to be an Agalmatolite, but the present one is altogether of a different class of minerals, and I am indeed at present inclined to suppose it to be the red variety of the rare and little known mineral Indianite; but I am desirous of obtaining if possible more of it from Dr. Spilsbury, before destroying the appearance of our present specimen (in its Economical point of view) by taking sufficient for quantitative analysis which alone can test the correctness of my supposition, as the mere physical characters and such qualitative examination as I have been able to make from splinters will not suffice. The (undoubted) presence of Magnesia also in our specimen, though but in a small per centage, would make it differ from Indianite; but this may be a chance impurity.

Another addition to our Museum is a specimen of the Muscat Rock Salt, which contains I find a considerable portion of Gypsum. This when the salt deliquesces is left in minute crystals on the surface. This impurity is no doubt the cause of the decomposition, which is said by those in the trade, to go on when this salt and white salt (sea water salt) are in contact; but the action is obscure, unless we also suppose the presence of organic matter (from infusoriae) to decompose the sulphate of lime.

The salt contains also muriate of lime and sulphate of soda, as usual in all mineral salts.

Captain Sherwill has presented to us a complete set of specimens of the red and vein-stones of the lead and antimony veins near Bhaugulpore, of which he had before sent us specimens, and he has accompanied them with a sketch map of the locality.

These are on the table and are—

No. 1.—Found over the lead.

No. 2.—Pieces picked from the surface.

No. 3.—Soil of the surface.

No. 4.—Walls of the vein.

No. 5.—Ore.

No. 6.—Dyke traversing the vein.

He has also presented an enamelled brick, found in some ruins in the jungles of the Rajmahal Hills, and a few specimens, said to be those from which gold is obtained at some place in the Straits of Malacca, which, if this be correct (for it is a tale of 20 years ago, as told to Captain Sherwill, by a friend) is new; for they are partly copper ores, grey copper, Malachite, and copper pyrites, which were not before known, I think, as being amongst the wrought auriferous ores of the Straits, nor that even the iron pyrites of those localities

were so, and two of the specimens are of this description and perhaps auriferous, but too small for examination.

Captain Jenkins has sent for examination two specimens, which I presume to have been the silver ore reported some time back in the papers, as he says of them that they "have been sent in as something very precious," but he supposes them to be nothing but pyrites in an unusual form;" and in this he is right, as they are nothing more than Arsenical Pyrites, the Mispick of the Cornish Miners, deposited in, or which have taken the form of, part of the stem of a plant and are wholly valueless, as they do not contain a particle of any precious metal.

Mr. Cheap, B. C. S. has presented us with a tray of specimens from Egypt from which we shall be able to select a few good additions to our building materials, and one or two to our geological collections. Mr. Cheap's letter to Mr Laidlay says:—

"Beauleah, 26th February, 1843.

"MY DEAR Sir,—It is hardly necessary for me to describe the specimens but the localities of some may be interesting and enable others to make, similar collections if desirable. The *Syenite* is all from the quarry at Assowan (the Syene of the ancients). The Sandstone from the large quarry at Silsilis in upper Egypt, from which nearly all the stone employed to build the temples in Egypt is supposed to have been taken, and the enormous space left blank leaves very little doubt that the materials of these magnificent temples were hewn from these quarries. There are among the specimens some round stones of a species of flint with circles in the centre. These I picked up in the valley leading to the tombs of the kings behind Goomoo, and opposite to Thebes. What is singular as regards them is that the Egyptians make their bread (or rather biscuit, from its hardness) exactly like these in upper Egypt, and must, from these stones, have taken the idea of the shape and form. The only other specimen that requires notice is a lump of black granite. This I picked up near the temple said to have been erected by Philip Arideus or Alexander (son of Alexander the great) when Ptolemy was governor of Egypt in their name. The temple is about the centre of those at Karnac, and it is the only one built of this granite and the facing only is composed of it. You will observe it is very black, and would no doubt stand a good polish. It is very similar to what is used to build the Sona Mosjeed or Mosque at Gour, and also one of the Mosques at Rajmahal. The specimens were all collected by me during the months of October, November and December, 1841, in Egypt, and if of any use to the Society I beg you will present them for me at the next meeting."

Lord Arthur Hay has obliged us with four specimens of graphite, of which three are from Travancore and one from Ceylon; the Ceylon specimen is remarkable for its large lamellæ, and one of those from Travancore for its very large and well separated fibres.

*Geology and Mineralogy.*—I obtained at an auction a very handsome specimen of the bluish grey Pumice of Aden, interleaved with minute laminæ of gypsum, resembling mica, which is an addition to our cabinet which is not as yet well furnished with the numerous varieties of this remarkable, though common mineral.

From Captain W. S. Sherwill, of the Dinapore Survey, we have received another of his valuable and beautifully executed Geological Maps of the part of Zillah Monghyr south of the Ganges, and part of Zillah Bhaugulpore which include the Kurruckpore hills and the hot well district, with a case of specimens, a few of which are on the table.

H. PIDDINGTON.

The proceedings of the evening were terminated by Mr. Blyth's usual exhibition of novelties and donations in his department during the past month.

Certified to be a true Report,

J. W. COLVILLE, *President.*

W. B. O'SHAUGHNESSY, *Secretary.*

## Report of Curator, Zoological Department.\*

The donations received since the last meeting of the Society are as follow :—

1. G. T. Lushington, Esq., Almorah. A skin of the Kyang (*Equus hemionus*, Pallas), with skull and limb-bones attached, and perfect, excepting that it has been mutilated of about half of one of the ears. Unfortunately, a quantity of water had penetrated into the tin-case in which it was packed, or this specimen would have arrived in fine condition. As it is, it does not appear to have received much injury, and will, I think, bear setting up. The animal was killed at the season of shedding its rough winter-coat, and exhibits in parts both this and its summer pelage.

2. Baboo Debendernáth Tagore. The carcass of an adult male Hoolock (*Hylobates hoolock*).

3. Mr. DeCruz, of the Botanic Garden. A particularly fine specimen of the common Bengal Civet (*Viverra zibetha*).†

4. Raja Buddenáth Roy. A dead specimen of the Cockatoo Parrakeet (*Nymphicus novæ hollandiæ*).

5. J. Laidlay, Esq. A dead River Turtle, or *Trionyx*, the *Gymnopus Duvaucelei*, Dum. and Bibr.; and numerous specimen of Bats—*Cynopecterus*, *Megaderma*, and *Nycticejus*.

6. R. W. G. Frith, Esq. A dead Shámah (*Kittacincta macrourus*), in fine plumage.

7. Mr. Birch, of the Pilot Service. Various fish, crustacea, &c., collected at the Sandheads ‡

\* For February meeting, 1848.

† This species, which on the eastern side of the Bay of Bengal extends southward into the Malayan peninsula (where, however, it is much rarer than *V. tanggalunga*), and is found also in Assam and in the valley of Nepal, does not appear to occur in the peninsula of India, unless partially to the N. E. on the confines of Bengal; but in the extreme south, as in Travancore, it is represented by an allied race which entirely resembles the African *V. civetta*, except that the dorsal crest is not continued forward to between the ears. There is a specimen of this race in the Museum of the Zoological Society, referred to *V. zibetha* in Mr. Waterhouse's Catalogue of the Mammalia in that collection, and said there to be from Sumatra, having been presented by Sir Stamford Raffles; but I strongly suspect that this habitat is erroneously assigned, especially as the specimen was formerly labelled as having been presented by the late duke of Northumberland.

‡ Among *Scomberidæ* lately contributed by Mr. Birch and others, may be enumerated *Chlorinemus aculeatus*, (Bloch), C. and V. Hist. Poiss. VIII, 282, *Caranx nigripes*, ibid. IX, 92, *Stromateus securifer*, ibid. IX, 293, *Curtus Blochii*, ibid. IX, 312, *Equula insidiatrix*, ibid. X, 72, and a *Pelamys* which appears to be undescribed. I may also

S. Capt. Phayre, Moulinein. A specimen of *Tupaia javanica* (v. *peguana*) in spirit, and three skins of Squirrels, viz. *Sc. chrysonotus*, nobis, *Sc. atrodorsalis* apud nos, var., and *Sc. pygerythrus* (?), Is. Geoff., var.

Of these, the species referred to *Sc. atrodorsalis* is unquestionably identical with that from the province of Ye, described in XVI, 872, but differs from it very remarkably in having the under-parts and inside of limbs deep maroon-red instead of dilute rusty, the throat and front of the neck being weaker-coloured in both, and the hairs of the tail are distinctly annulated, which is not the case with the former specimen. Mr. Gray's description of *Sc. atrodorsalis* (quoted in a note to XVI, 873), if his species be truly identical with the Tenasserim one, would indicate a third variety of colouring. The long white or yellowish-white whiskers would seem to constitute a marked feature of all three.

The Squirrel which I refer to *Sc. pygerythrus*, var., accords in size and proportions with *Sc. vittatus*, except that the tail is longer and more bushy. Entire upper-parts uniformly grizzled, much as in that species, or more especially as in the tail of that species,—the tip of the tail being black : under-parts, inside of limbs, fore-paws above, and almost the entire hind-limbs exteriorly, together with a broad median line to the tail underneath continued to its black tip, bright ferruginous-chestnut ; that of the belly bordered laterally with black : whiskers black. This animal accords very well with my brief note of *Sc. pygerythrus*, except in having the four paws light chestnut-rufous above, continued over the exterior of the hind-limbs : and coming from the Tenasserim provinces, it is far more likely to be the true *Sc. pygerythrus* of Pegu, than the very distinct species inhabiting the extreme south of India, which Mr. Elliot would refer to the same (XVI, 1272).

Among the specimens procured in the neighbourhood may be remarked a small grey *Ephialtes*, having a rufous tinge on the aigrettes and slightly elsewhere in parts, which satisfactorily shows the identity of *Scops sunia* and *Sc. pennata*, H., conformably with Mr. Jerdon's expressed opinion on the subject (vide XIV, 550). The variation is analogous to that of the N. American *Eph. asio* (comprising the Red and Mottled Owls of Wilson), and to a less extent it is observable in the common *Syrnium aluco* of Europe, as well shown by the specimens of this bird in the Society's museum. Mr. G. R. Gray unites *Sc. pennata*, H., with *Eph. scops* of Europe ; from which it is

noticed an interesting Clupeoid fish, the *Apterygia ramcarata*, Gray, of Hardwicke's Illustrations, four specimens. M. Valenciennes doubts the existence of this fish, vide *Hist. Poiss.* XX, 333 ; supposing it to be either a mutilated or imperfectly represented individual of his *Pristigaster tartoor* : but the total absence of the dorsal fin proves to be a normal character of the species.



indeed hardly, if at all, distinguishable; but I am unaware that the latter is subject to the same variation of colouring, at least in Europe; and it does not appear that this variation depends, in any degree, upon the age or sex of the specimens.

*Rhynchæa bengalensis*. Three newly hatched chicks of this species have been obtained and added to the collection: I have before taken a fully developed egg from the oviduct of a 'Painted Snipe;' and have several times met with the half-grown young, which resemble the *adult male*, not the larger and more finely coloured *adult female*.

*Mytus chitala*, Buch. Ham. A specimen of this common fish, remarkable for having several large black spots scattered over the whole sides of the body, though only below the lateral line. In all other respects, perfectly identical in its characters with ordinary examples of *M. chitala*, which species I have never previously observed to vary in this way, though the number of tail-spots is very irregular.

*Strix delicatula* (?), Gould. A specimen received long ago from Europe as the common *Str. flammea*, was most probably from Australia in the first instance, but is even smaller than are the dimensions assigned to *delicatula* by Mr. Gould, and its beak is proportionally the same as in *Str. flammea*. Wing  $9\frac{1}{2}$  in.; tail 4 in.; tarse 2 in.; bill to gape  $1\frac{2}{3}$  in. Plumage exactly as in Mr. Gould's figure of *Str. delicatula*.

Having had occasion to look again over Capt. Hutton's specimens (noticed in XIV, 340, XV, 135, and XVI, 775), I find that the Afghanistan species of Cat referred to *F. chaus* (XIV, 342), is of the allied species figured and described in Jacquemont's *Voyage* by the name *F. Jacquemontii*, Is. Geoff. Capt. Hutton's specimen has no blackish markings on the limbs, and is remarkable for a broad ridge of longer hair continued over the whole spine. At the end of the tail are two or three somewhat faint blackish rings.\* The species of Cat, No. 6 of Capt. Hutton's list, was treated of in my last Report, and there compared with a specimen of *F. catus* from Scotland.

The *Cyanecula* from Afghanistan (XVI, 780,) is probably of the species lately distinguished by M. Eversmann, by the name *Sylvia cyane*. That common in India, according to Mr. Strickland (*in epistolâ*), appears to be the true *Motacilla suecica* of Linæus, of which *M. cærulecula*, Pallas, should therefore be a synonyme; and the bird of southern Europe, currently referred to *suecica* (vera), must stand as *C. Wolfsi*, Brehm. It does not yet appear that there are any differences by which the females of these three races may be discriminated.

E. BLYTH.

\* We have a head of *F. Jacquemontii*, from the Burnes collection.

*Meteorological Register kept at the Surveyor General's Office, Calcutta, for the Month of April, 1848.*

Days of the Month.	Maximum Pressure observed at 9h 50m.						Minimum Pressure observed at 4 p. m.						Rain Gauges.	Moon's phases.		
	Barometer reduced to 32°	Fahrenheit.	Temperature.		Wind.	Aspect of the Sky.	Barometer reduced to 32°	Fahrenheit.	Temperature.		Wind.	Aspect of the Sky.			Maximum Temperature.	
			Of the Mer-cury.	Of the Air.					Of the Mer-cury.	Of the Air.						
1	29.854	83.0	82.0	76.2	N. W.	Cumuli.	29.734	89.8	87.5	76.9	S. W.	Cloudy.	94.0	0.88	Upper 40	0.99
2	.925	85.8	84.4	76.2	S. W.	Cloudy.	.806	91.8	81.9	75.8	S. W.	Ditto.	90.9	..	Feet 4	..
3	.931	86.4	85.9	78.1	S.	Cumuli.	.796	90.2	89.1	76.0	S. W.	Cumuli.	90.0	..	Inch	..
4	.915	86.9	86.2	77.2	S. W.	Ditto.	.785	92.4	90.9	75.7	S. W.	Ditto.	91.4	..	..	..
5	.864	86.4	86.9	78.3	S. W.	Cirro cumuli.	.727	93.0	91.9	78.2	S.	Cirro cumuli.	93.0	..	..	..
6	.860	88.0	88.1	79.6	S. W.	Ditto.	.723	92.5	91.2	79.5	S.	Ditto cloudy.	95.0	..	..	..
7	.822	87.8	87.8	80.0	S. sharp.	Cumuli.	.584	90.9	90.3	81.0	S. sharp.	Cirro cumuli.	97.0	..	..	..
8	.709	86.2	85.9	79.0	S. ditto.	Ditto.	.580	95.7	93.9	81.8	S. ditto.	Gloomy.	94.8	..	..	..
9	.683	89.3	89.3	82.4	S.	Ditto.							92.5	..	..	..
10													96.8	..	..	..
11	.704	89.6	89.2	81.7	S.	Cumuli	.569	98.2	96.4	81.3	S.	Gloomy.	101.0	..	..	..
12	.775	88.7	88.7	79.9	S. sharp.	Ditto.	.674	93.9	92.2	81.0	S. sharp.	Cumuli.	100.0	..	..	..
13	.840	90.2	89.8	80.0	S.	Ditto.	.717	93.0	91.9	82.0	S.	Ditto.	94.6	..	..	..
14	.786	90.0	89.8	80.1	S. W.	Ditto.	.648	94.0	93.0	79.1	S.	Ditto.	95.8	..	..	..
15	.786	90.0	89.3	79.9	S. sharp.	Ditto.	.646	92.5	91.7	81.6	S.	Ditto strati.	95.0	..	..	..
16	.758	89.9	89.3	80.0	S. ditto.	Ditto.	.627	93.9	91.7	81.2	S.	Cumuli.	94.8	..	..	..
17	.709	90.0	89.4	81.0	S.	Ditto.	.589	94.7	93.0	82.2	S.	Ditto.	95.7	..	..	..
18	.730	91.0	90.8	81.9	S. W.	Ditto.	.589	95.9	94.4	82.8	S. W.	Cirro ditto.	96.2	..	..	..
19	.747	91.5	90.9	81.7	S.	Cirro ditto.	.613	96.4	94.7	81.2	S.	Cloudy.	98.0	..	..	..
20													98.8	..	..	..
21	.796	90.0	89.5	79.2	S.	Clear.							96.8	0.24	0.32	..
22													97.2	..	..	..
23	.714	91.3	91.4	79.8	S.	Clear.	.585	96.4	95.0	82.0	S. sharp.	Clear.	99.0	..	..	..
24	.769	91.5	90.8	80.5	S. W.	Ditto.	.654	97.0	95.6	77.0	S. W.	Ditto.	98.7	..	..	..
25	.813	91.4	90.5	80.4	S. sharp.	Ditto.	.720	95.8	94.4	79.9	S. sharp.	Ditto.	98.0	..	..	..
26	.785	92.0	91.5	80.0	S. ditto.	Cirro cumuli.	.621	94.8	93.5	83.2	S. ditto.	Ditto.	96.8	..	..	..
27	.705	91.5	91.4	81.5	S.	Clear.	.544	101.0	98.5	84.3	S.	Ditto.	104.8	..	..	..
28	.683	92.0	91.9	80.6	S. sharp.	Cirro cumuli.	.555	97.5	96.2	85.0	S.	Ditto.	99.5	..	..	..
29	.701	92.0	91.7	82.5	S.	Clear.	.595	97.0	96.2	80.9	S.	Cirro ditto.	99.9	..	..	..
30	.741	92.9	92.1	81.6	S.	Cirro cumuli.	.637	94.3	93.3	82.1	S.	Cloudy.	101.0	..	..	..
Mean	29.782	89.5	89.1	80.0			29.651	94.1	92.7	80.5			99.9	1.12	1.31	

The mean observation of the Maximum Thermometer in the corresponding month of last year, was 94.3.—And the total quantity of Rain which fell in the do. do. of do. was 2.33 Inches.

